

WIND TUNNEL TEST ON A 1/4.622 FROUDE SCALE, HINGELESS ROTOR, TILT ROTOR MODEL

VOLUME IV

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H. R. Alexander

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Ames Research Center

by

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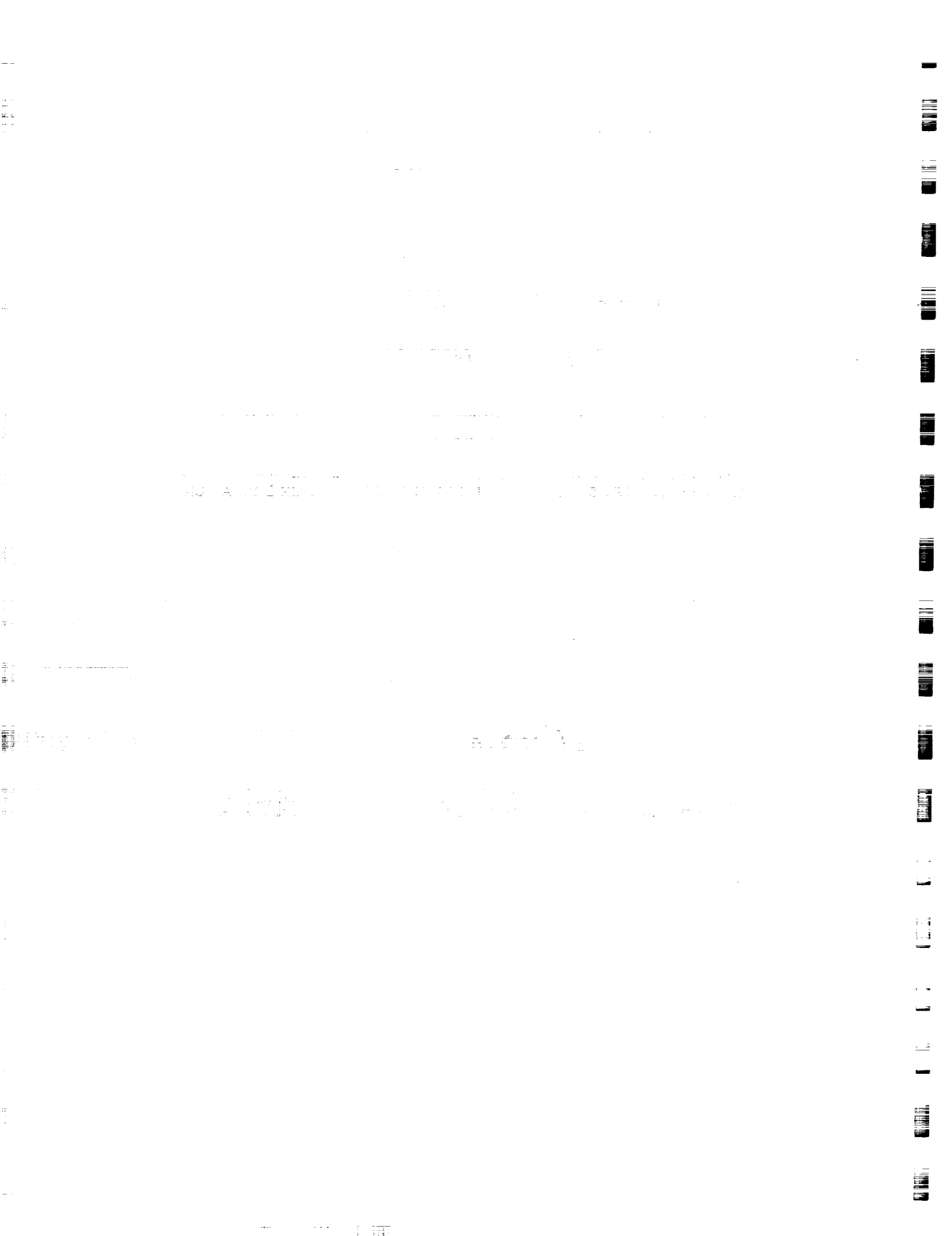
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ABSTRACT

This document is Volume IV of four volumes of experimental data obtained on a wind tunnel test of a 1/4.62 Froude scale hingeless rotor tilt rotor model. The test generated parametric data from hover, through transition and out to 300 knots full scale speed in cruise, and was performed under NASA Contract NAS2-9015.

This volume contains cruise flight data files.

FOREWORD

This report was prepared by the Boeing Vertol Company of Philadelphia, Pennsylvania for the National Aeronautics and Space Administration, Ames Research Center under NASA Contract NAS2-9015.

Mr. M. A. Shovlin and Mr. T. Galloway of Ames Research Center were technical monitors for this work.

The Boeing Program Manager was Mr. J. P. Magee. The contributions of the Boeing Vertol Wind Tunnel staff are acknowledged.

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LIST OF SYMBOLS

<u>SYMBOL</u>	<u>NOMENCLATURE</u>	<u>UNITS</u>
A_1	Lateral cyclic pitch	Deg
B_1	Longitudinal cyclic pitch	Deg
b	Span	Ft
CTB-L	Left Rotor Thrust Coefficient	$\frac{T_L}{\rho \pi R^2 V_T^2}$
CPB-L	Left Rotor Power Coefficient	$\frac{HP_L \times 550}{\rho \pi R^2 V_T^3}$
CNFB-L	Left Rotor Normal Force Coefficient	$\frac{NF_L}{\rho \pi R^2 V_T^2}$
CSFB-L	Left Rotor Side Force Coefficient	$\frac{SF_L}{\rho \pi R^2 V_T^2}$
CPMB-L	Left Rotor Pitching Moment	$\frac{PM_L}{\rho \pi R^3 V_T^2}$
CYMB-L	Left Rotor Yawing Moment	$\frac{YM_L}{\rho \pi R^3 V_T^2}$
CTB-R	Right Rotor Thrust Coefficient	$\frac{T_R}{\rho \pi R^2 V_T^2}$
CPB-R	Right Rotor Power Coefficient	$\frac{HP_R \times 550}{\rho \pi R^2 V_T^3}$
CNFB-R	Right Rotor Normal Force Coefficient	$\frac{NF_R}{\rho \pi R^2 V_T^2}$
CSFB-R	Right Rotor Side Force Coefficient	$\frac{SF_R}{\rho \pi R^2 V_T^2}$
CPMB-R	Right Rotor Pitching Moment	$\frac{PM_R}{\rho \pi R^3 V_T^2}$

LIST OF SYMBOLS (continued)

<u>SYMBOL</u>	<u>NOMENCLATURE</u>	<u>UNITS</u>
CYMB-R	Right Rotor Yawing Moment	$\frac{Y_M R}{\rho \pi R^3 V_T^2}$
CLW-AC	Aircraft Lift Coefficient	$\frac{\text{Lift}}{1/2 \rho V^2 S}$
CSFW-AC	Aircraft Side Force Coefficient	$\frac{SF}{1/2 \rho V^2 S}$
CAFN-AC	Aircraft Axial Force Coefficient	$\frac{\text{Axial Force}}{1/2 \rho V^2 S}$
CPMW-AC	Aircraft Pitching Moment	$\frac{\text{Pitch Moment}}{1/2 \rho V^2 S \bar{c}}$
CYMW-AC	Aircraft Yawing Moment	$\frac{\text{Yaw Moment}}{1/2 \rho V^2 S b}$
CRMW-AC	Aircraft Rolling Moment	$\frac{\text{Roll Moment}}{1/2 \rho V^2 S b}$
\bar{c}	Wing Chord	FT
D	Diameter	-
D'	Airframe Drag	LB
EI _{FLAP}	Flapwise Bending Stiffness	-
EI _{CHORD}	Chordwise Bending Stiffness	-
FM	Figure of Merit	-
GJ	Torsional Stiffness	-
GW	Gross Weight	LB
HP	Rotor Horsepower	HP
I _{xx} , I _{yy} , I _{zz}	Mass Moment of Inertia about the Three Axes	IN-LB SEC ²
I _N	Nacelle Incidence	Deg
I _p	Acceleration Pitch Inertia	-
H _z	Hertz	-

LIST OF SYMBOLS (continued)

<u>SYMBOLS</u>	<u>NOMENCLATURE</u>	<u>UNITS</u>
I^*_p	Centrifugal Pitch Inertia	-
I_{PIVOT}	Moment of Inertia - Polar	LB-FT
i_w	Wing Incidence	Deg
L	Lift	LB
NA	Neutral Axis	-
p	Per Rotor Revolution	-
PM	Pitching Moment	FT LB
q	Freestream Dynamic Pressure $1/2\rho V^2$	LB/FT ²
R	Rotor Radius	FT
r	Radial Location to a Blade Station	FT
RM	Rolling Moment	FT LB
S	Wing Area	FT ²
SF	Side Force	LB
T	Rotor Thrust	LB
t	Airfoil Thickness	FT
V	Freestream Velocity	FT/SEC
V_T	Rotor Tip Speed	FT/SEC
X	Aircraft Propulsive Force	LB
X/R or r/R	Non-Dimensional Radius	-
YM	Yawing Moment	FT LB
α	Angle of Attack	-
α_f	Fuselage Pitch Deflection	Deg
α_s	Nacelle Shaft Pitch Deflection	Deg

LIST OF SYMBOLS (continued)

<u>SYMBOLS</u>	<u>NOMENCLATURE</u>	<u>UNITS</u>
β	Side Slip Angle	Deg
δ_A	Aileron Deflection	Deg
δ_F	Flap Deflection	Deg
∂	Partial Derivative Operator	-
Δ	Increment In Coefficient	-
$\Delta\theta$	Incremental Blade Pitch	-
ρ	Density of Air	LB SEC ² /FT ⁴
σ	Rotor Solidity $\frac{bCR}{\pi R^2}$	-
ψ	Rotor Azimuth Angle	Deg
θ_{75}	Rotor Blade Collective Pitch at the Three Quarter Radius	Deg
μ	Advance Ratio V/V_T	-
ω_α	Wing Torsional Frequency	cps
ω_β	2nd Mode Bending Blade Frequency	-
ω_C	Wing Chordwise Bending Frequency	cps
ω_L	1st Mode Bending Blade Frequency	-
ω_P	Aircraft Pitch Frequency	cps
ω_V	Wing Vertical Bending Frequency	cps
Ω	Rotor Angular Velocity	-
$1\Omega, 2\Omega$	Integer Frequency Ratio	-
$\Omega - \omega_l$	Lower Blade Lag Rotational Frequency	cps
$\Omega + \omega_\beta$	Upper Blade Flap Rotational Frequency	cps
$\Omega - \omega_\beta$	Lower Blade Flap Rotational Frequency	cps

LIST OF SYMBOLS (continued)

<u>SYMBOLS</u>	<u>NOMENCLATURE</u>	<u>UNITS</u>
ζ_v	Wing Vertical Bending Damping % Critical	-
ζ_c	Wing Chord Bending Damping % Critical	-
ζ_α	Wing Torsion Damping % Critical	-

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1.0 INTRODUCTION

This document contains wind tunnel test data obtained on a 1/4.622 scale dynamically similar model of a tilt rotor aircraft which has composite hingeless blades. The test was performed under NASA contract NAS2-9015.

The objective of the test was to generate information on the behavior of rotor and airframe effects over a range of flight parameters representing the complete operating envelope of the tilt rotor vehicle. The information which was required included the magnitude and sensitivity of:

- (1) Rotor forces and moments
- (2) Blade loads and pitch link loads
- (3) Wing rotor interference effects
- (4) Airframe forces and moment

for values of such flight parameters as:

- (1) Nacelle tilt angle
- (2) Forward speed
- (3) Aircraft attitude in pitch and yaw
- (4) Collective and cyclic pitch control
- (5) Wing flap deflection

The selection of test points and true variations for parameters was made in such a way that a comprehensive set of data was obtained for all potential flight conditions through hover, a wide envelope of transitions, and cruise at speeds up to 300 knots.

The purpose of this acquisition of comprehensive rotor and airframe test data is to provide the knowledge and basis for understanding rotor and airframe behavior which is an essential prerequisite to the development of an efficient system of integrated rotor and aircraft controls.

A secondary objective of the test was to determine the feasibility of a control system which minimizes blade loads in cruise. The characteristic feature of this system is the use of cyclic pitch geared by a simple mechanical linkage to the motion of the stick and control surfaces. These must be properly phased and scheduled to achieve good flying qualities in all flight regimes, subject to the overall design requirement of an optimal control system to maintain simplicity and reliability as far as is consistent with the loads, maneuver envelope and flying qualities of the aircraft.

The rotor controls provide a major portion of the control capability from hover through the low transition speed range, although the conventional control surfaces are operative in all regimes of flight including hover. As speed is increased, and the aerodynamic surfaces become effective for trim and control, the rotor controls can be directed at minimizing rotor loads. In cruise the problem reduces to determining the rotor control required to maintain minimum loads. Prior to this test, a limited amount of full scale experimental data existed for transition, and for cruise up to speeds of 192

knots. This test program extends the range of this data in the transition regime, and in cruise flight the range was extended up to the simulated speed of 300 knots.

The data obtained on this test goes a long way toward providing the information which is necessary to tackle the job of designing an optimized and integrated control system for a tilt rotor aircraft using a soft inplane hingeless rotor. Work which remains to be done involves reducing the data obtained in the test, to an analytical format with forces, moments, loads, etc., expressed as functions of the relevant flight parameters. This is necessary for two reasons:

- (1) to provide an understanding of the significance and relative importance of the parameters which will permit efficient planning of future full scale tests
- (2) to provide a set of simple functions representing the body of test data, from which the rotor effects may be calculated within the context of a real time simulation

This reduction of the test data to analytical functions of the parameters is beyond the scope of the current contract. It is planned that this additional step will be accomplished in the near future under separate funding.

The data obtained during this test is presented in four volumes.

Volume I contains a detailed description of the model, the test installation, test procedures and data reduction: for the convenience of the user, an abbreviated discussion of these is included in Volumes II, III and IV. It was felt that the amount of data generated was too voluminous to be readily presented in a single volume, and Volumes II, III and IV present all the data in a logical sequence.

2.0 DESCRIPTION OF MODEL AND DATA FILE SYSTEM

This section of the report contains an abbreviated description of the model and also an explanation of the order in which the data are presented and identifies the values of test variables held constant in any given test run.

2.1 Model Description

The model tested is a 1/4.622 scale full span, powered configuration that is Froude scaled from the Model 222 Tilt Rotor Research aircraft. This model, shown in Figure 1 was provided by the contractor for this test program and has the following major dynamically-scaled components.

1. Two 3-bladed rotors
2. Two nacelles
3. Full span wing
4. Fuselage
5. Tail

Basic model dimensions are shown in Table 1. The rotors are defined in Figure 2 and have the same aerodynamic and aeroelastic characteristics as the full scale rotor built under NASA contract NAS2-6505. It has remote controlled collective pitch and two axes cyclic pitch actuation systems.

The nacelles are joined to the wing by a pivot and have remote pitch actuation.

TABLE 1
MODEL DIMENSIONS

ROTOR

Number of Blades	3
Radius	33.75 IN. (85.72 cm)
Chord	4.078 IN. (10.35 cm)
Twist	42.5 DEG.
Airfoil Section	23021/23010-1.58
Solidity	0.115
Rotor Speed (Hover)	1185 RPM
Rotor Speed (Cruise)	825 RPM
Collective Pitch Available	-5 to 65 DEG.
Cyclic Pitch Available	+ 10 DEG.

NACELLE

Nacelle Pivot Position (in % of Wing Chord)	40%
Rotor Disc Nacelle Pivot Distance	12.33 IN. (31.31 cm)

WING

Airfoil Section	634221 Modified
Span (Rotor \bar{C} to Rotor \bar{C})	86.76 IN. (220.37 cm)
chord	15.53 IN. (39.44 cm)
Area	9.36 FT. ² (.869 M ²)
Aspect Ratio	5.61
Flap in % of Chord	30%
Wing Incidence	2 DEG.
Thickness - Chord Ratio	0.21

FUSELAGE

Diameter	14.69 IN. (37.31 cm)
Length	102.50 IN. (260.35 cm)

TAIL - HORIZONTAL

Area	2.73 FT. ² (.253 M ²)
Span	10.89 IN. (27.66 cm)
Aspect Ratio	4.25
Taper Ratio (C _{TIP} /C _{ROOT})	.384
Root Chord	14.05 IN. (35.68 cm)
Airfoil Section	64A010
Elevators in % of Chord	44.1%

TABLE 1 (continued)TAIL - VERTICAL

Area	2.03 FT ²	(.185 M ²)
Span	22.75 IN.	(57.78 cm)
Aspect Ratio	1.77	
Taper Ratio (C _{TIP} /C _{ROOT})	.35	
Root Chord	20.98 IN.	(58.29 cm)
Airfoil Section	64A008	
Rudder in % of Chord	50.6	

ROTOR

Diameter 67.50 In. (171.45 cm)
 Solidity .115
 No. Blades 3

WEIGHTS

Design Gross Wt 122 Lbs (55.35 Kg)

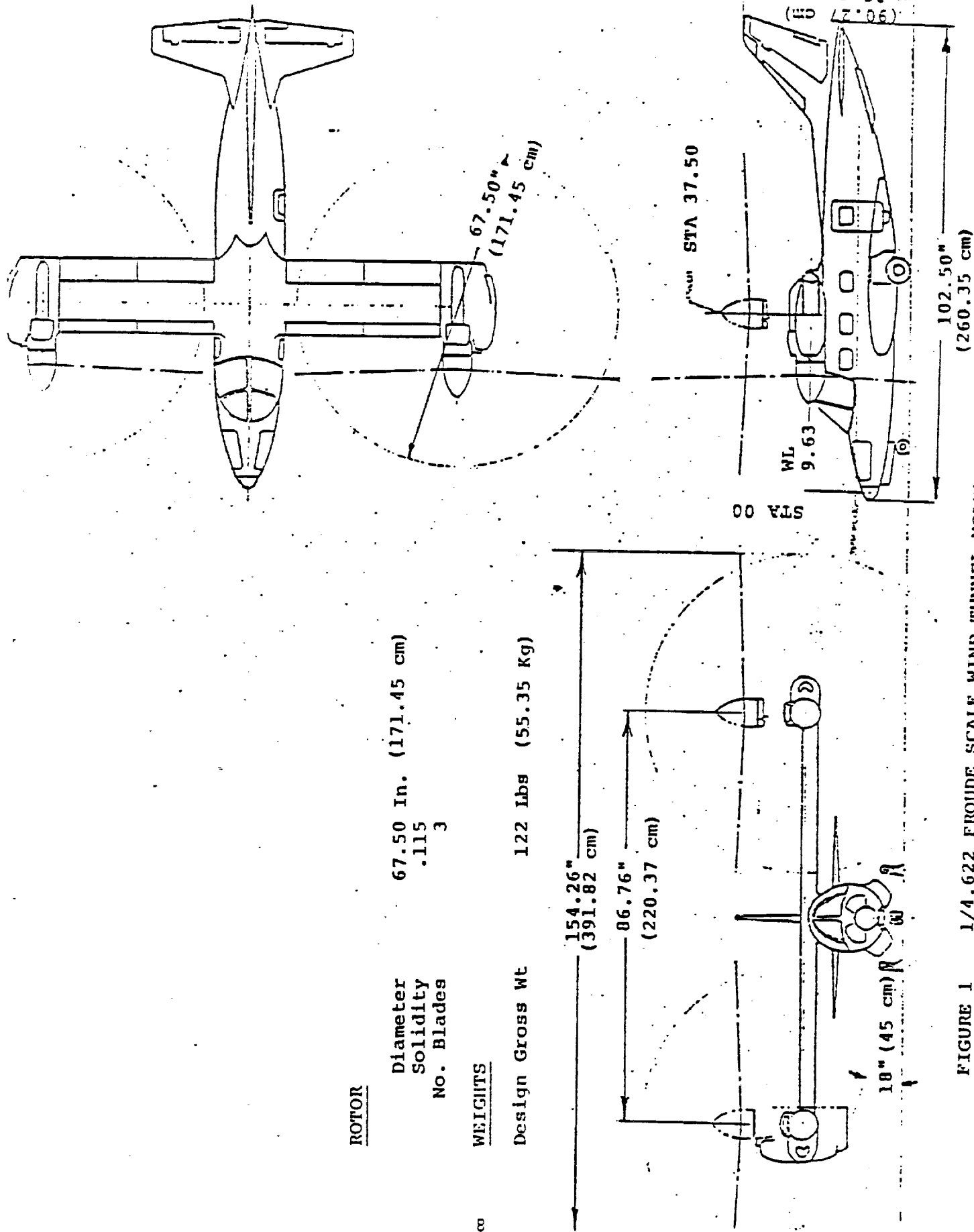


FIGURE 1 1/4.622 FROUDE SCALE WIND TUNNEL MODEL.

85.72

ROTOR RADIUS = 33.75
3 BLADES/ROTOR

TWIST REFERS TO
BOEING REFERENCE LINE

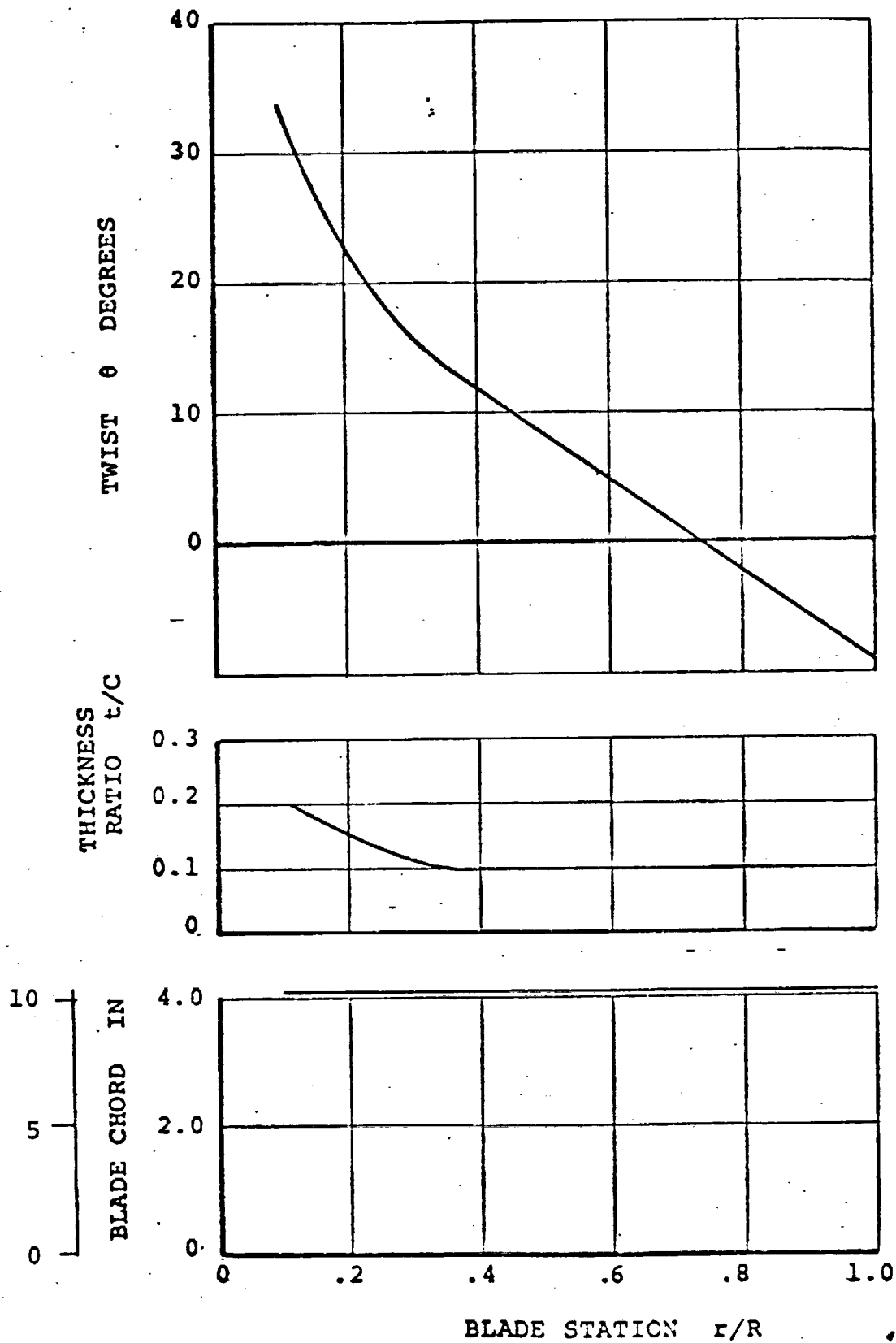


FIGURE 2. 1/4.622 FROUDE SCALE MODEL BLADE DEFINITION

The wing is crown mounted and has full span flaps and leading edge umbrellas for download alleviation. Flaps are used during transition to provide additional lift and the outboard section of the flap is used as an aileron for control in conjunction with outboard spoilers.

The wing, fuselage, and empennage are dynamically scaled from the Model 222 aircraft and the rudder and elevator are remotely controlled. The model was supported on a pedestal mount with pitch and yaw capability.

The primary instrumentation includes strain gages to obtain flap, chord and torsion loads at the blade root. A six component balance in each nacelle measures the rotor forces moments and torque. A six component main balance located in the fuselage measures aircraft forces and moments. Position indicators connected to meters provide a visual display of the aircraft control positions which were remotely controlled. Each rotor has an RPM and 1/rev output. Thermocouple readouts provided safety monitoring of critical motor, gearbox and cross shaft bearing temperatures.

The model is powered by a 20 HP, 11,375 RPM electric motor manufactured by Task Corporation. The motor drives a 3.04:1 reduction gear box in the center fuselage which is connected by cross shafts in the wing to a 3.09:1 reduction gear box in each nacelle. This provides a total gear reduction from the electric motor to rotor of 9.39:1.

Photographs of the model and detailed model data are provided in Volume I

Figure 3 shows the model mounting on the SRH teststand which provides pitch and yaw motion to the model. The dimensions associated with the balance centers (both main and nacelle balances) in relation to the hub center and aircraft CG reference location are shown in Figure 4.

The rotor cyclic controls are not located in the classical axis system. Figure 5 shows the location of the actuators in the azimuth and the blade location when the pitch arm is over the actuator. This defines the cyclic axis system used on test.

Sign conventions used for defining the measured forces and moments are depicted in Figure 6. The directions shown being positive forces and moments.

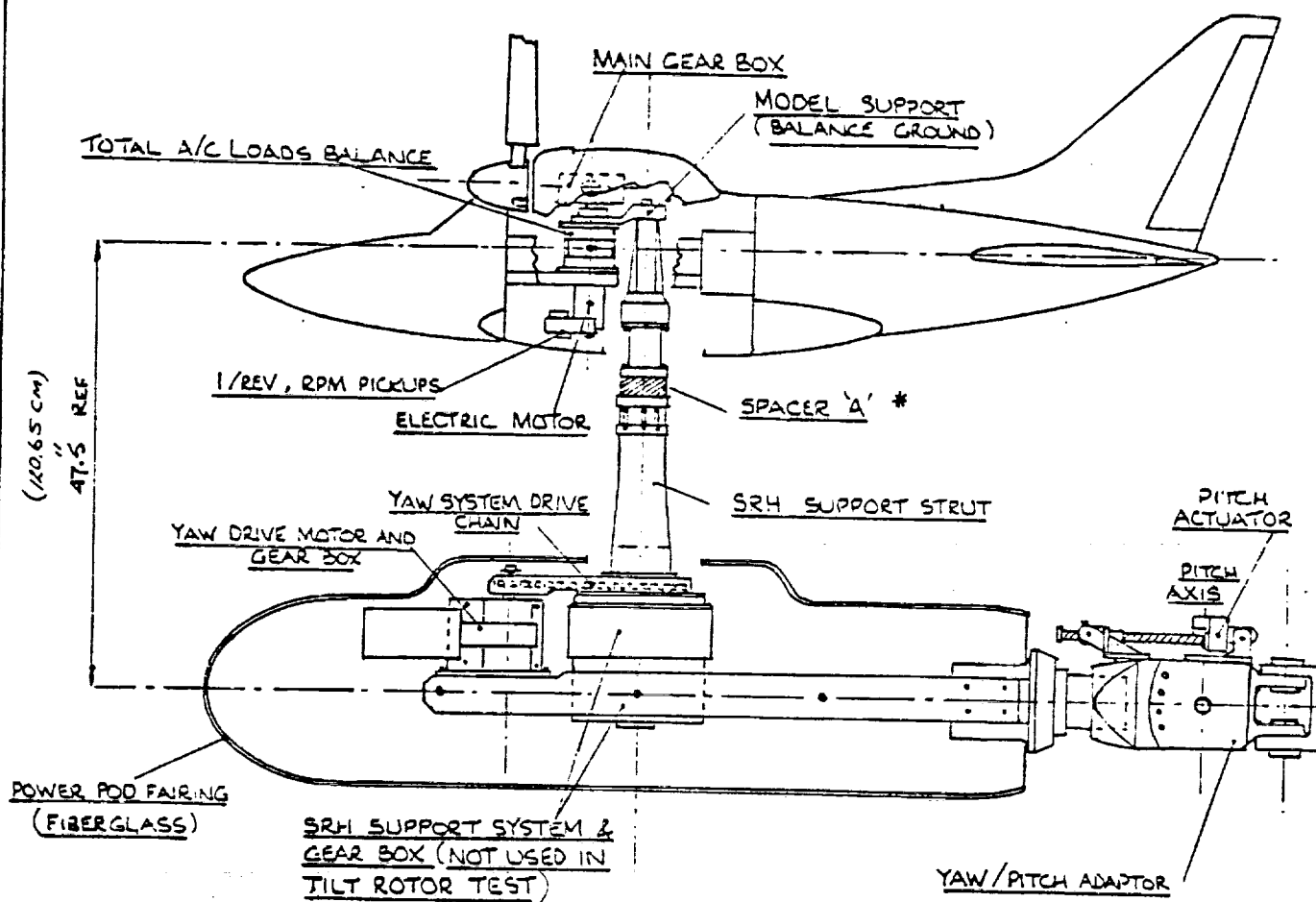
Positive pitch and yaw directions are in the same sense as positive pitch and yaw moments.

In order to provide a ready transformation of model data to full scale, a table of scale factors is given in Table 2.

2.2. Data File Index System

The procedure adopted on test is best explained by referring to Figure 7. This figure depicts the combinations of nacelle incidence I_N and airspeed (shown full scale) selected for

- * FOR RUNS 1-26 SPACER 'A' WAS 20" LONG ('DUMMY' SRH BALANCE).
 FOR RUNS 27-35 SPACER REPLACED BY SRH BALANCE (20" LONG).
 FOR RUNS 36-166 SPACER 'A' FITTED AS DRAWN (2" LONG).



SCALE : 1/20

VR 095Q-1 ~ 1/4.622 SCALE TILT ROTOR MODEL

Figure 3. GENERAL ARRANGEMENT AND INSTALLATION ON SRH TEST STAND

Ker,
 5-1-76
 FORM 46284 (2-76)

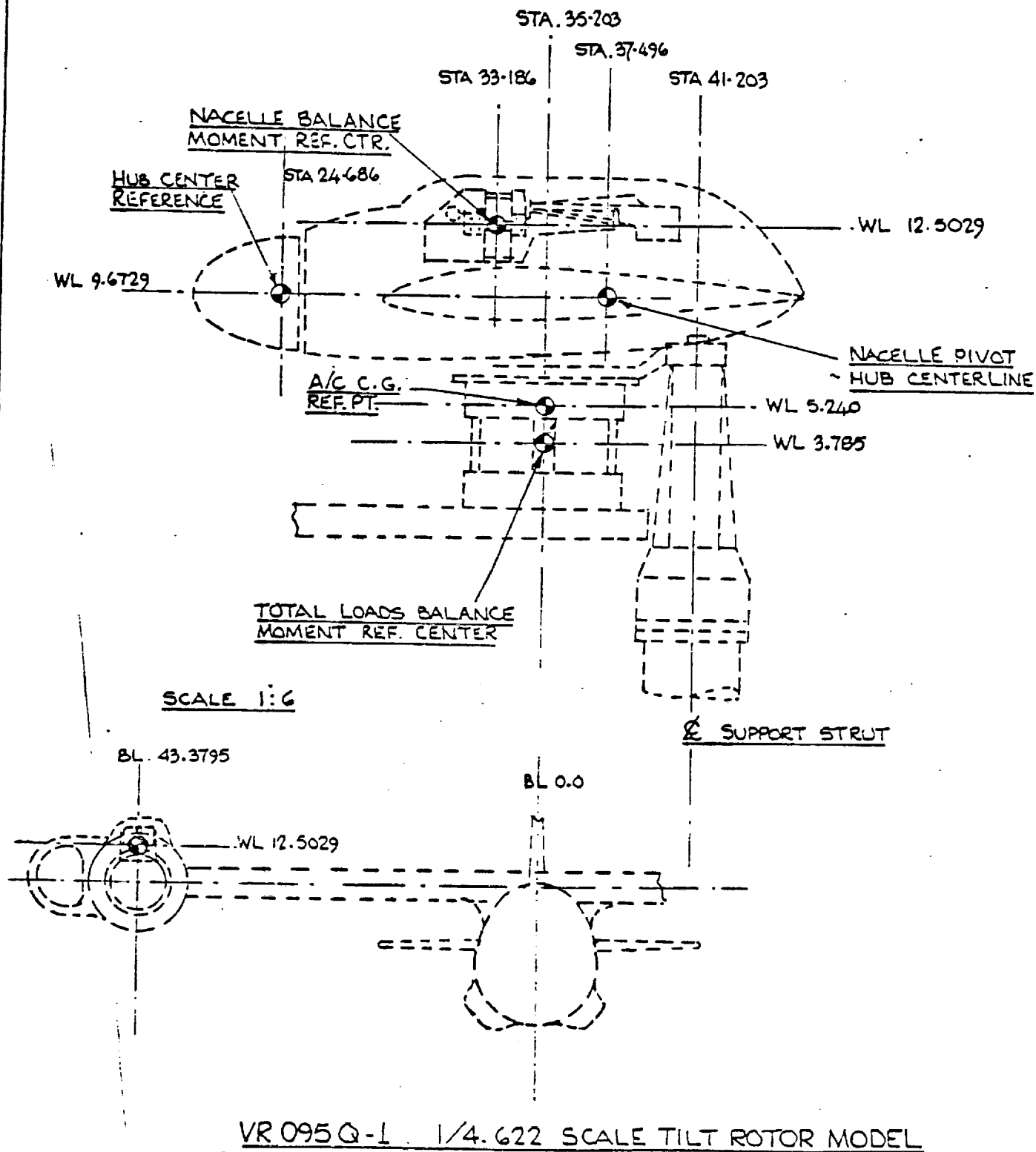
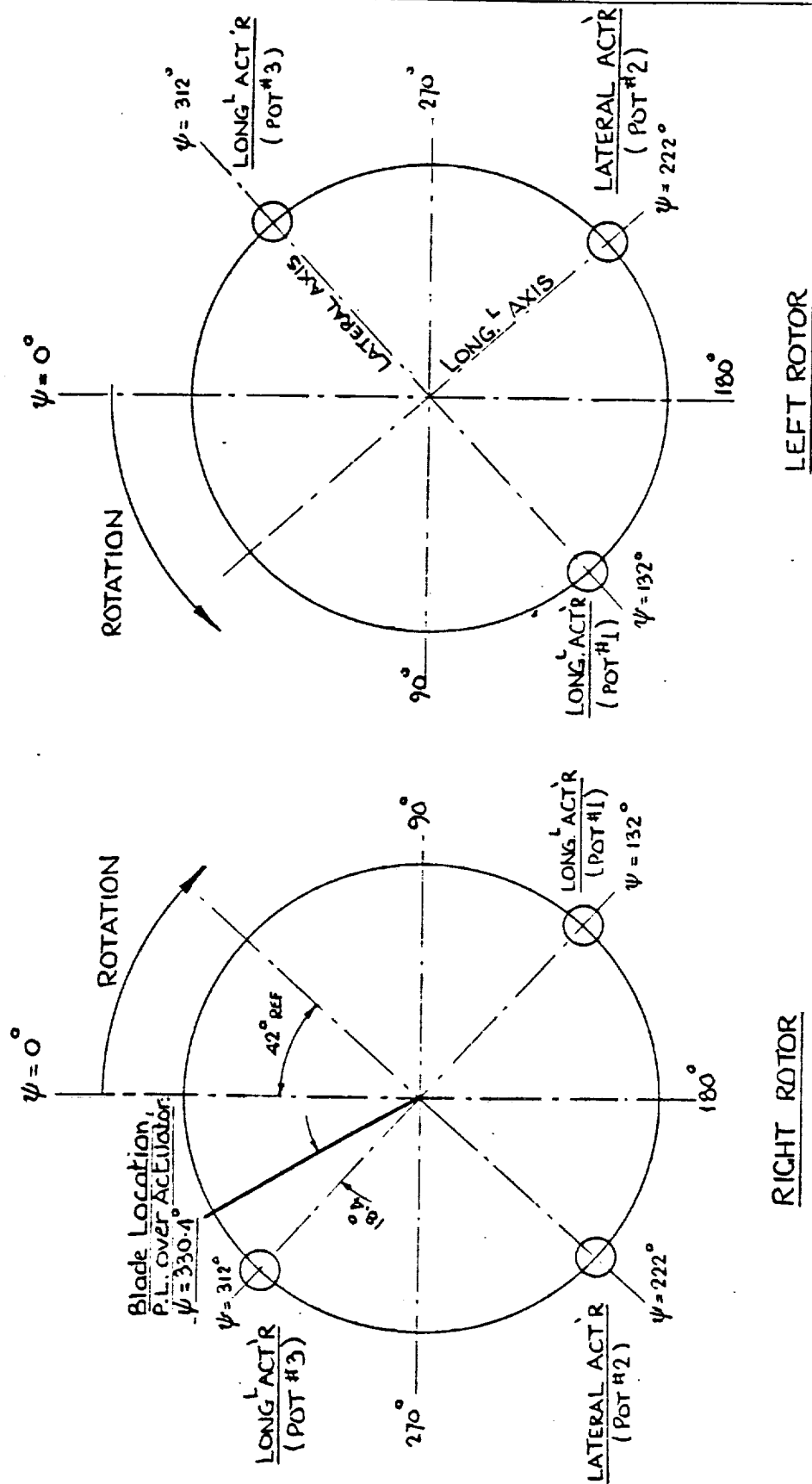


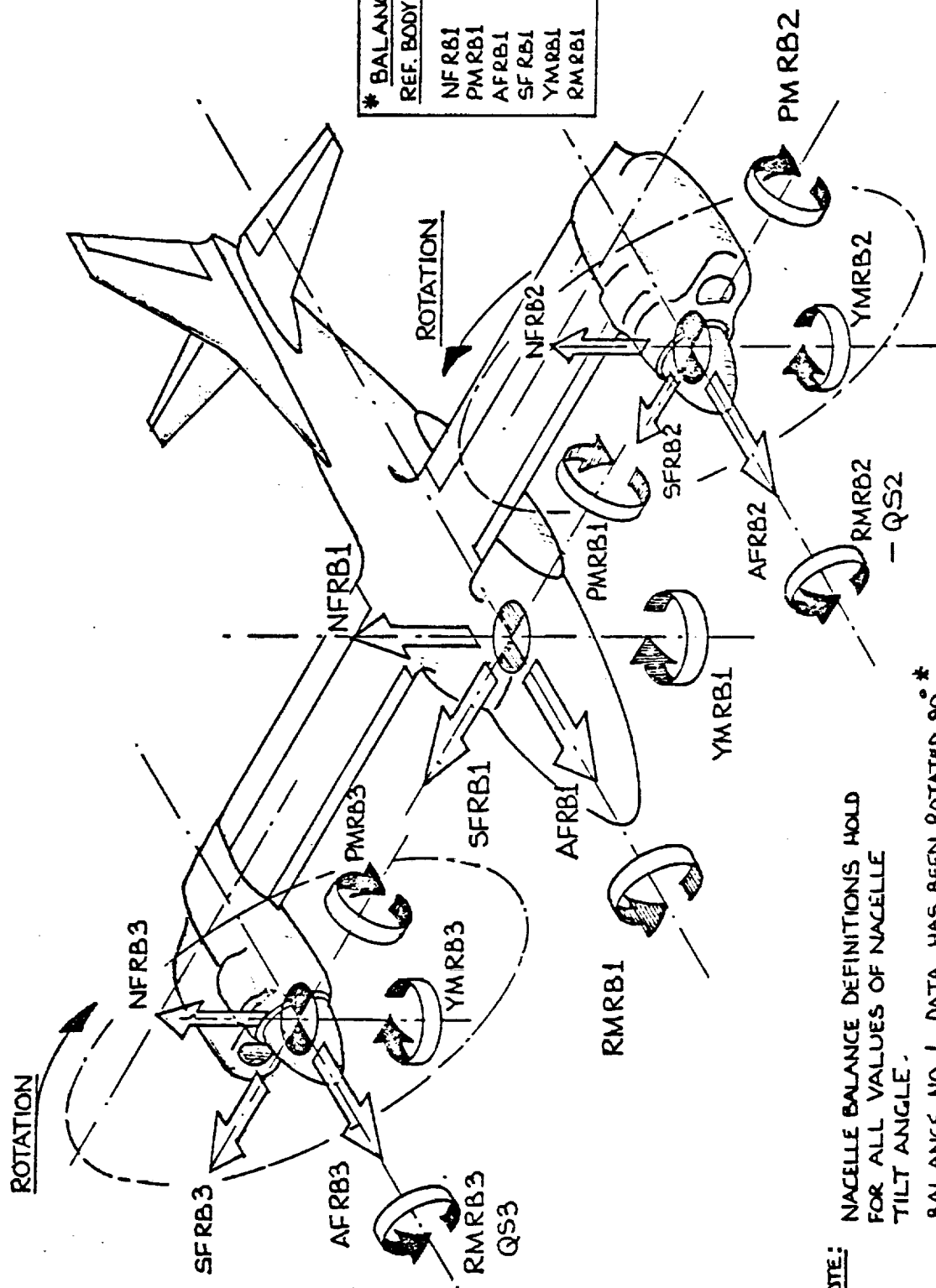
Figure 4. RELATIVE BALANCE LOCATIONS & MODEL REFERENCES



FRONT VIEW ON MODEL, $\psi_N = 0^\circ$

VR095 Q-1 1/4.622 SCALE TILT ROTOR MODEL

Figure 5. CONTROL SYSTEM ARRANGEMENT



* BALANCE 1 DATA	
REF. BODY	BALANCE
NFRB1	+ AFBAL1
PMRB1	+ PMBAL1
AFRB1	- NFBAL1
SFRB1	+ SFBAL1
YMRB1	- RMBAL1
RMRB1	+ YMBAL1

Figure 6. DEFINITION OF MODEL FORCES & MOMENTS REFERRED TO REF. BODY AXES
 VR 095 Q-1 1/4.622 SCALE TILT ROTOR MODEL

TABLE 2. SCALE FACTORS

LINEAR DIMENSIONS	4.622
MASS OR WEIGHT	98.739
TIME	2.15
FREQUENCY	0.46514
VELOCITY	2.15
VISCOUS DAMPING	45.927
STIFFNESS	2109.36
SPRING RATE	21.363
MASS MOMENT OF INERTIA	2109.36
FORCE	98.739
STRAIN	1.0
MOMENT OR TORQUE	456.373
POWER	212:278
PER REV FREQUENCY	1.0
DISC LOADING	4.622
MACH NO.	2.1498
FROUDE NO.	1.0
LOCK NO.	1.0

INITIAL TEST CONDITIONS

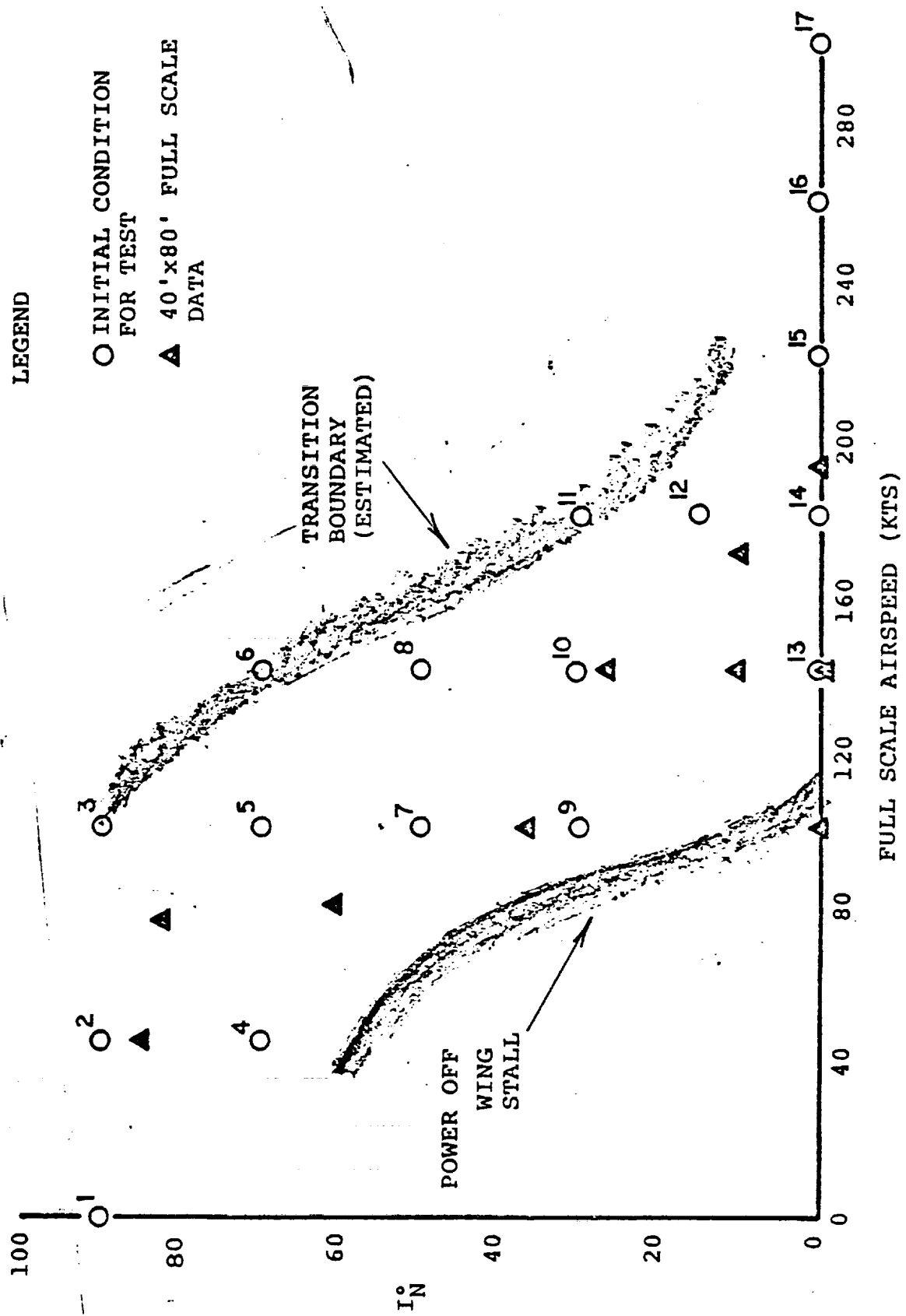


Figure 7. Scope of Test; Initial Test Conditions

initial test conditions. Seventeen initial test conditions are shown and numbered. Data obtained at conditions 1 through 4 is to be found in Volume I. This report contains cruise test data from conditions 13, 14, 15, 16 and 17 which are $I_N = -1^\circ$ at full scale airspeeds of 140, 180, 220, 260 and 300 knots.

The hover and transition data (conditions 1 through 12) are to be found in Volumes I, II and III.

At each cruise test condition the model was set initially to zero degrees angle of attack and the following variables exercised in turn, angle of attack, with various flap settings, yaw angle, longitudinal cyclic pitch, and lateral cyclic pitch. These tests were then followed by combined angle of attack and cyclic pitch runs for load control investigations. Each data file corresponding to an initial flight condition contains the six components of force and moment (and power) on the left rotor, the right rotor and also the total airframe forces and moments. This data is followed by alternating chord bending, flap bending and pitch link loads on the left and right rotor respectively. The test variables are first plotted versus α then yaw, etc., as depicted in Table 3. For the combined angle of attack and cyclic runs only the blade load and control position data has been reduced. Each appendix number corresponds to a flight condition. For example appendix 13 corresponds to flight condition 13 which is $I_N = -1^\circ$ at a speed which is representative of full scale 140 knots. Thus Figures 13-001 through 13-024 are the measured data as functions of α . Figures 13-025 through 13-048 are the measured

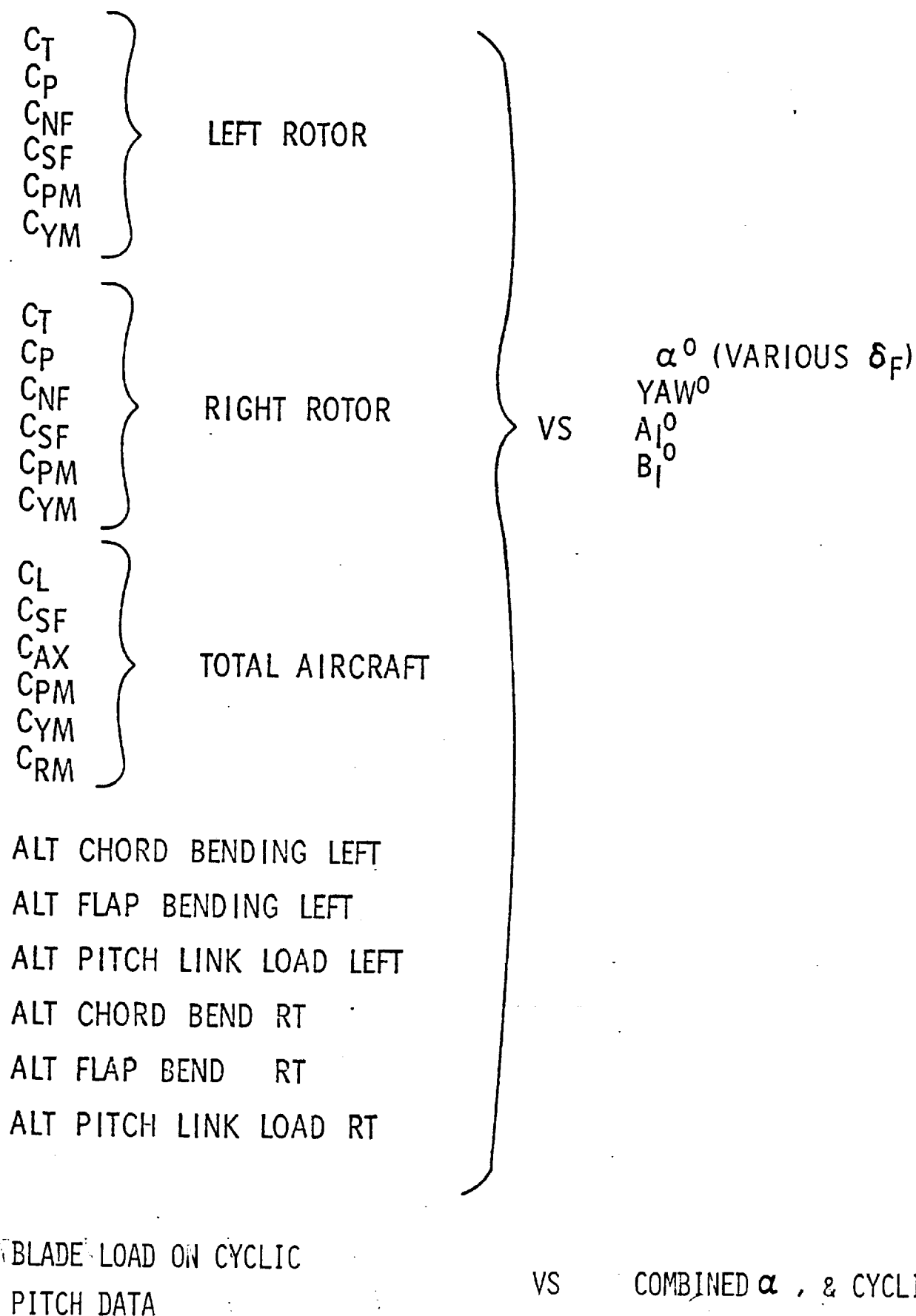
CRUISE DATA ORGANIZATION

TABLE 3. TEST VARIABLE PLOTTING SEQUENCE

data as functions of yaw angle and so on. This organization and sequencing of test information is only changed when measured data were found to be spurious for reasons of instrumentation failure, etc. as noted in the instrumentation log given in Volume I.

Section 3 of this report contains notes pertaining to the data sets shown in this document and provides an account of the cases where data was found to be in error and discarded and also those cases where although no proof of error is apparent the information should be treated with caution. Fortunately, these cases amount to a small fraction of the overall results.

One further notation is necessary before the data provided can be usefully interpreted. During a run where one test variable is being exercised it is necessary to know the constant values of the other test variables. These data are identified in Table 4 for test conditions 13 through 17 are referenced by data set number, figure number and test variable name all of which are also given on the corresponding data graphs in the appendix. Thus for data set 13 the test constants during the angle of attack sweep on Runs 159, 160 and 161 (Data figures 13-001 to 13-024) can be obtained from Table 4 as

V Full Scale (Kts)	140 Kts.
α fuse	Variable

TEST VARIABLES HELD CONSTANT

CONDITION	PARAMETER VARIED	FIGURES	V	αFUSE	I _N	RPM	θ _{75L}	A _{1L}	B _{1L}	δF _L	θ _{75R}	A _{1R}	B _{1R}	δF _R	β	DATA SET
CRUISE I _N = -1° V _{FS} = 140 KTS	α	1-24	140		-1.4	830	33.8	-0.18	-0.7	0	34.6	0	0	0	0	13 ↓
	α		140		-1.4	830	33.8	-0.18	-0.7	10.0	34.6	0	0	10.0	0	
	α		140		-1.4	830	33.8	-0.18	-0.7	20.0	34.6	0	0	20.0	0	
	YAW ANGLE	25-48	139	0	-1.5	829	34.1	-0.2	-0.5	0	34.8	-0.1	0.1	0	0	
	LONG. CYC.	49-72	137	0	-1.3	829	33.7	-0.2	-0.5	0	34.1	-0.1	0	0	0	
	LAT. CYC.	73-96	139	0	-1.4	829	33.9	-0.2	-0.4	0	35.2	0	0	0	0	
	α	97,98,100,101	139		-1.4	830	33.8	-0.18	-0.7	-6.8	34.6	0	0	-0.1	0	
	α	97-102	137		-1.1	830	33.7	-0.18	-0.7	0	34.3	0	0	0	0	
	α	1-24	180		-1.4	830	41.4	-0.3	-1.0	-0.1	42.2	-0.3	-0.2	0	0.3	
	α		180		-1.4	829	41.4	-0.3	-1.0	9.8	42.3	-0.4	-0.1	9.6	0.3	
CRUISE I _N = -1° V _{FS} = 180 KTS	α	1-24	180		-1.4	830	41.4	-0.3	-1.0	19.9	42.3	-0.4	-0.1	19.9	0.3	14 ↓
	α		180		-1.4	830	41.4	-0.3	-1.0	0	42.3	-0.5	-0.2	0	0.2	
	YAW ANGLE	25-48	180	0	-1.4	830	41.5	-0.5	-1.0	0.2	42.5	-0.6	-0.7	0	0.2	
	LONG. CYC.	49-72	180	0	-1.4	830	41.9	-0.5	-1.0	0.2	42.6	-0.3	-0.7	0	0.2	
	LAT. CYC.	73-97	180	0	-1.4	830	41.4	-0.3	-1.0	-0.1	42.2	-0.3	-0.2	0	0.3	
	α	88,89,91,92	180		-1.4	830	41.4	-0.3	-1.0	0.2	42.2	-0.3	-0.2	0	0.2	
	α	88-93	180		-1.4	828	41.5	-0.3	-1.0	0.2	42.5	-0.3	-0.2	0.1	0.2	
	α	1-24	220		-1.5	830	47.1	-0.1	-0.8	0.2	48.1	-0.3	-0.1	0.5	0.2	
	α		220		-1.5	830	47.1	-0.1	-0.8	4.0	48.1	-0.3	-0.1	5.0	0.2	
	α		220		-1.5	830	47.1	-0.1	-0.8	9.7	48.1	-0.3	-0.1	9.7	0.2	
CRUISE I _N = -1.5° V _{FS} = 220 KTS	YAW ANGLE	25-48	220	0	-1.5	829	47.1	-0.1	-0.8	0	48.1	-0.3	-0.1	0	0	15 ↓
	LONG. CYC.	49-72	219	0	-1.4	829	46.9	-0.1	-0.6	0	47.5	-0.3	-0.1	0	0	
	LAT. CYC.	73-96	219	0	-1.4	828	47.0	-0.1	-0.6	0	48.1	-0.3	-0.1	0	0	
	α	97,98,100,101	220		-1.5	830	47.1	-0.1	-0.8	0.2	48.1	-0.3	-0.1	0.5	0.2	
	α	97-102	219		-1.4	826	47.3	-0.1	-0.8	0.7	48.1	-0.3	-0.1	0.2	0.1	
	α	1-24	220		-1.5	830	47.1	-0.1	-0.8	0.2	48.1	-0.3	-0.1	0.5	0.2	
	α		220		-1.5	830	47.1	-0.1	-0.8	4.0	48.1	-0.3	-0.1	5.0	0.2	
	α		220		-1.5	830	47.1	-0.1	-0.8	9.7	48.1	-0.3	-0.1	9.7	0.2	
	YAW ANGLE	25-48	220	0	-1.5	829	47.1	-0.1	-0.8	0	48.1	-0.3	-0.1	0	0	
	LONG. CYC.	49-72	219	0	-1.4	829	46.9	-0.1	-0.6	0	47.5	-0.3	-0.1	0	0	

TEST VARIABLES HELD CONSTANT

CONDITION	PARAMETER VARIED	FIGURES	V	α_{FUSE}	IN	RPM	θ_{75L}	A_{1L}	B_{1L}	δ_{FL}	θ_{75R}	A_{1R}	B_{1R}	δ_{FR}	β	DATA SET
CRUISE $I_N = -1^\circ$ $V_{FS} = 260$ KTS	α	1-24	259		-1.4	827	52.1	.2	-.1	.5	53.2	0	-.3	.3	.1	16 ↓
	α	25-48	259		-1.4	827	52.1	.2	-.1	4.9	53.2	0	-.3	5.2	.1	
	YAW ANGLE	49-72	259	0	-1.5	828	51.9	-.5	-.9	-.1	53.2	0	-.3	-.1	.1	
	LONG. CYC.	73-96	259	0	-1.5	829	51.7	.3		-.4	53.3	0		-.1	.1	
	LAT. CYC.	97,98,100,101	259	0	-1.5	831	51.6		-1.0	-.1	53.2		-.4	-.1	.1	
	α	97-102	259		-1.4	827	52.1	.2	-.1	.5	53.2	0	-.4	-.1	.1	
	α		259		-1.3	830	51.8			-.1	53.4		-.4	-.1	.1	
	α	1-24	299		-1.5	827	56.2	.3	-.75	-1.5	57.9	.35	-.27	-.1	.1	
	YAW ANGLE	25-48	299	0	-1.4	827	56.4	0	-.8	-1.5	57.9	.35	-.27	-.1	0	
	LONG. CYC.	49-63	299	0	-1.4	825	56.3	.2		-1.5	57.9	.35		-.1	0	
CRUISE $I_N = -1^\circ$ $V_{FS} = 300$ KTS	LAT. CYC.	64-87	299	0	-1.4	825	56.0		-.8	-1.5	57.7		-.27	-.1	.1	17 ↓
	α	88,89,91,92	299		-1.5	827	56.2	.3	-.75	-1.5	57.9	.35	-.27	-.1	.1	
	α		299		-1.5	827	56.2			-1.5	57.9		-.27	-.1	.1	
	α	88-93	299		-1.5	827	56.0			-1.5	57.7		-.27	-.1	.1	

I_N	1.4°
RPM	527
$\theta_{.75}$ left	52.1°
A_1 left	.2°
B_1 left	-.1°
δ_F left	.5°
$\theta_{.75}$ right	53.2°
A_1 right	0°
B_1 right	-.3°
δ_F right	-.3°
Yaw angle β	.1°

3.0 DATA DESCRIPTION

The purpose of this section of the report is to identify those test conditions and instrumentation problems which reflect on the interpretation of the data files in this volume. A complete test and instrumentation log is provided in Volume I.

The cruise data given in the appendix files of this volume was obtained on test runs 126 to 166.

The right hand rotor side force channel was found to be saturating on Run 82. The problem was internal to the balance and could not be fixed on line. To retrieve the right hand rotor data the left balance side force signal was fed into the right hand side force channel with an inverted sign. This procedure should provide reasonable data for symmetric flight conditions; however, the right hand rotor balance data should be used with caution.

During cruise runs at 140 knots and 180 knots the blade gage wave forms were observed to contain unexpected harmonics and subharmonics. Similar data was apparent in the shaft torque. During investigations to determine the cause of the problem, a flexible coupling in the drive system failed.

After replacing the coupling, the blade gage wave forms returned to normal and the test proceeded. The data at 140

knots was re-run at the end of the test; however, there was insufficient time to re-run the 180 knot data. The loads sensitivities to the test variables for condition 14 are probably correct; however, the minimum loads levels are incorrect.

At some flight speeds, angle of attack sweeps were performed with different wing flap settings to provide data on the effect of wing ϕ on rotor forces and moments. This data should be analyzed point for point referring to the coincident ϕ measurement since the precise flap setting might be suspect at the higher speeds.

$$I_H = -70 \text{ VFS} = 140 \text{ KHz.}$$

BVWT 182 VR0950-1

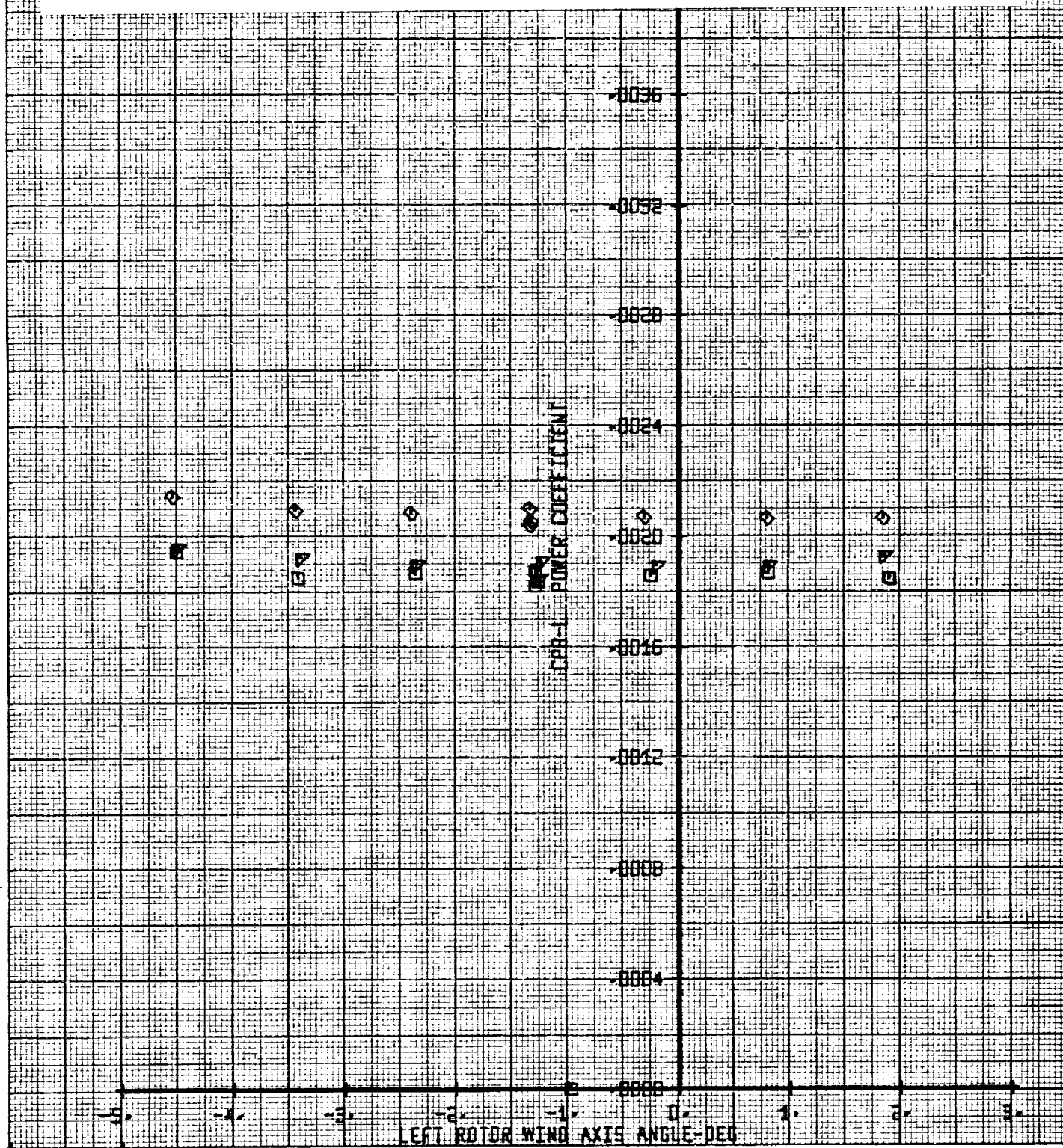
LEFT ROTOR MODE

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS F.S.	ALPHA-FUS	FLAP
◇	159	-1	140	VARY	0
◇	160	-1	140	VARY	10
◇	161	-1	140	VARY	20

Figure 13-002. Left Rotor Power Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$



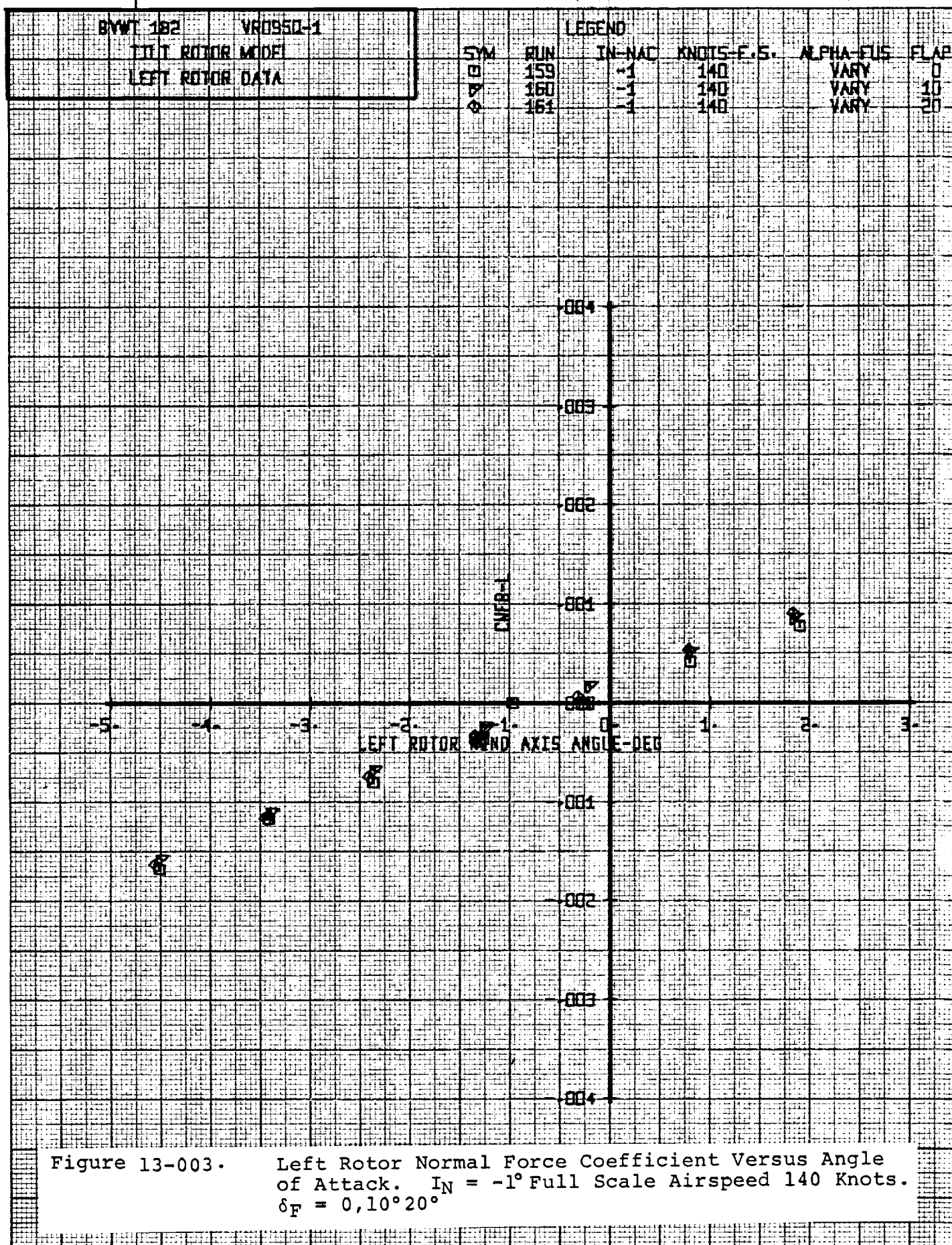


Figure 13-003. Left Rotor Normal Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots. $\delta_F = 0, 10^\circ 20^\circ$

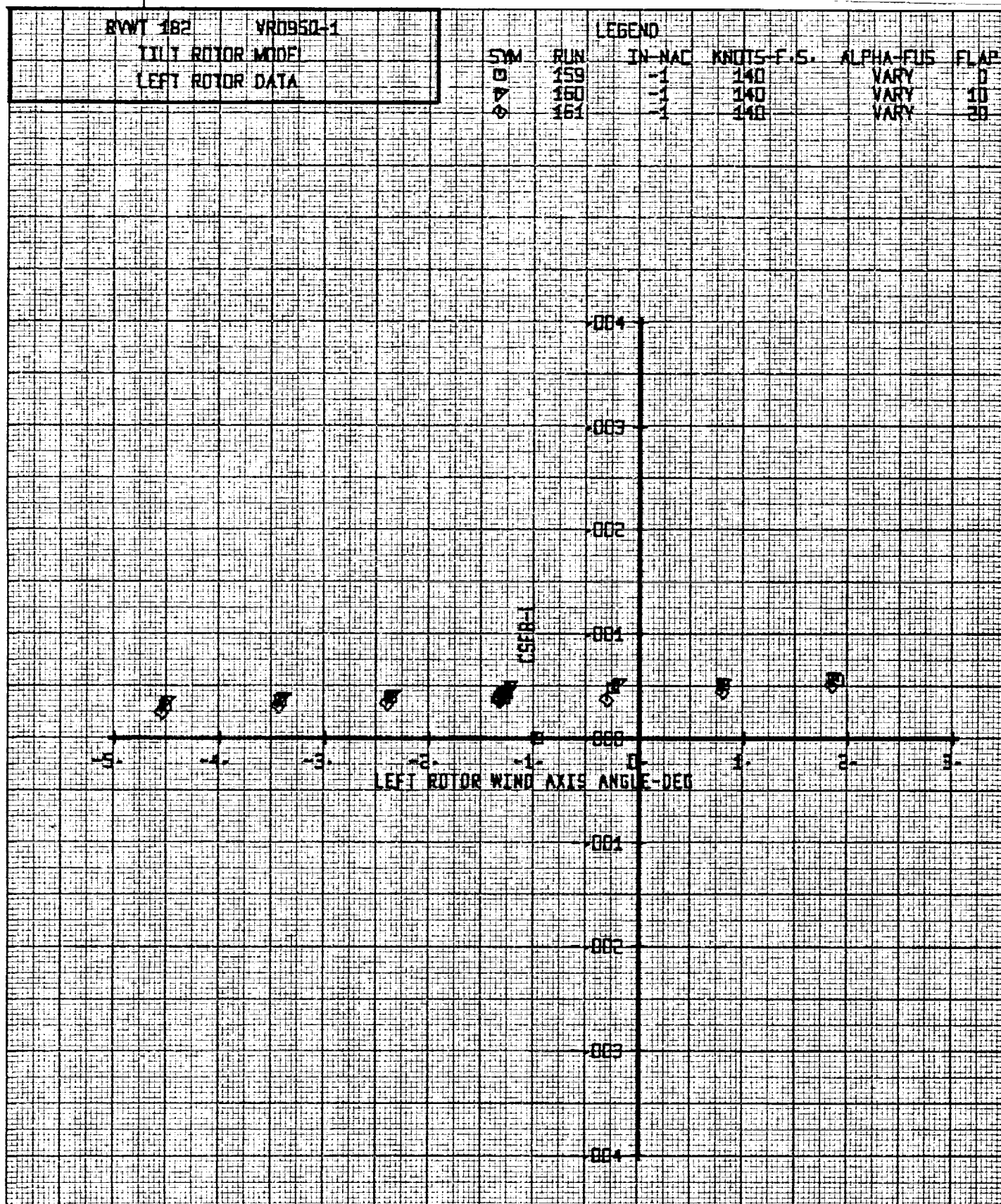


Figure 13-004. Left Rotor Side Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots. $\delta_F = 0, 10^\circ 20^\circ$

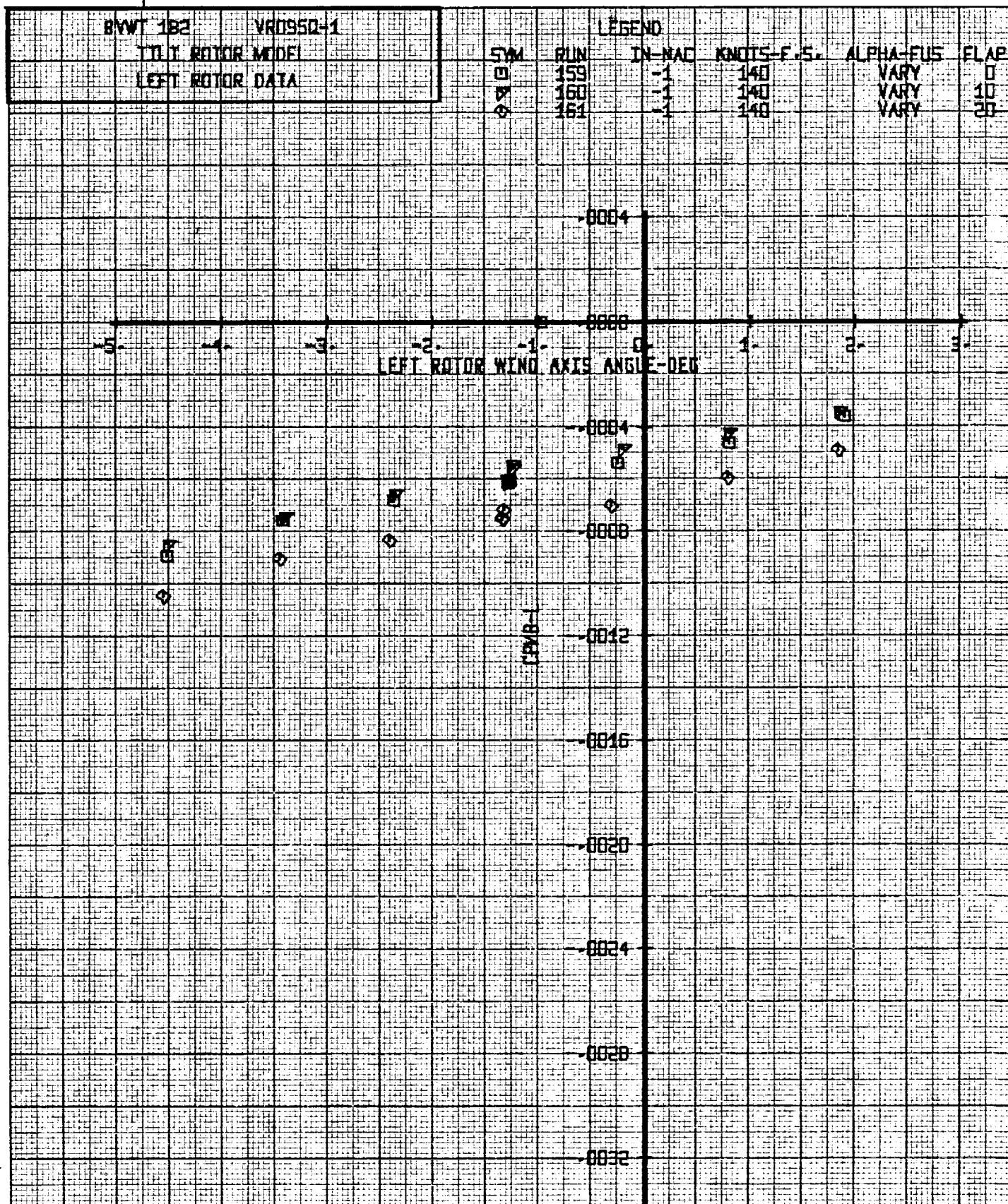
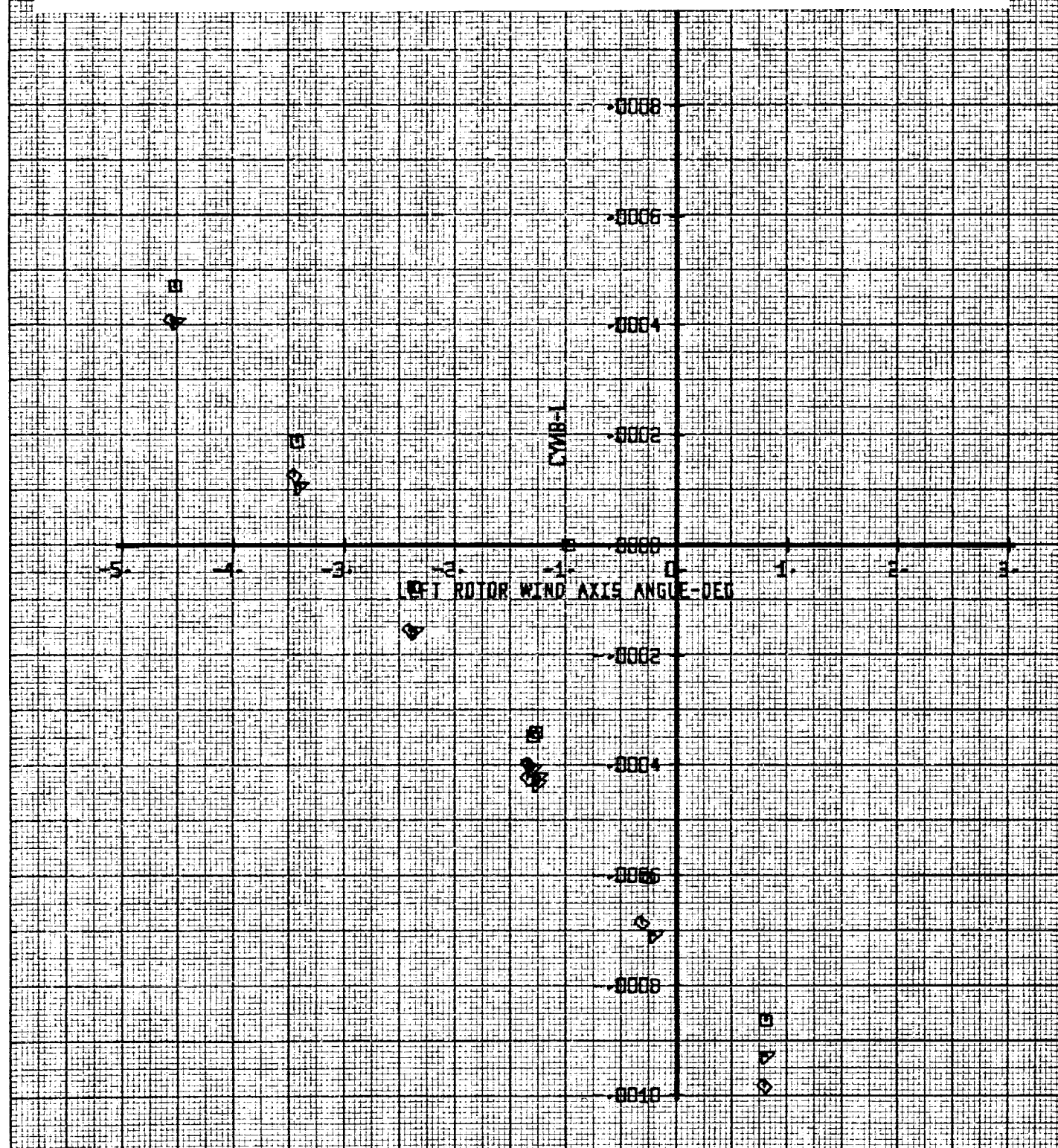


Figure 13-005. Left Rotor Pitching Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$

BWVT 182		VR0950-1		LEGEND			
TILT ROTOR MODEL				SYM	RUN	IN-NAC	KNOTS-F.S.
LEFT ROTOR DATA				□	159	-1	140
				▽	160	-1	140
				◇	161	-1	148
							ALPHA-FUS
							VARY
							VARY
							FLAP
							0
							10
							20

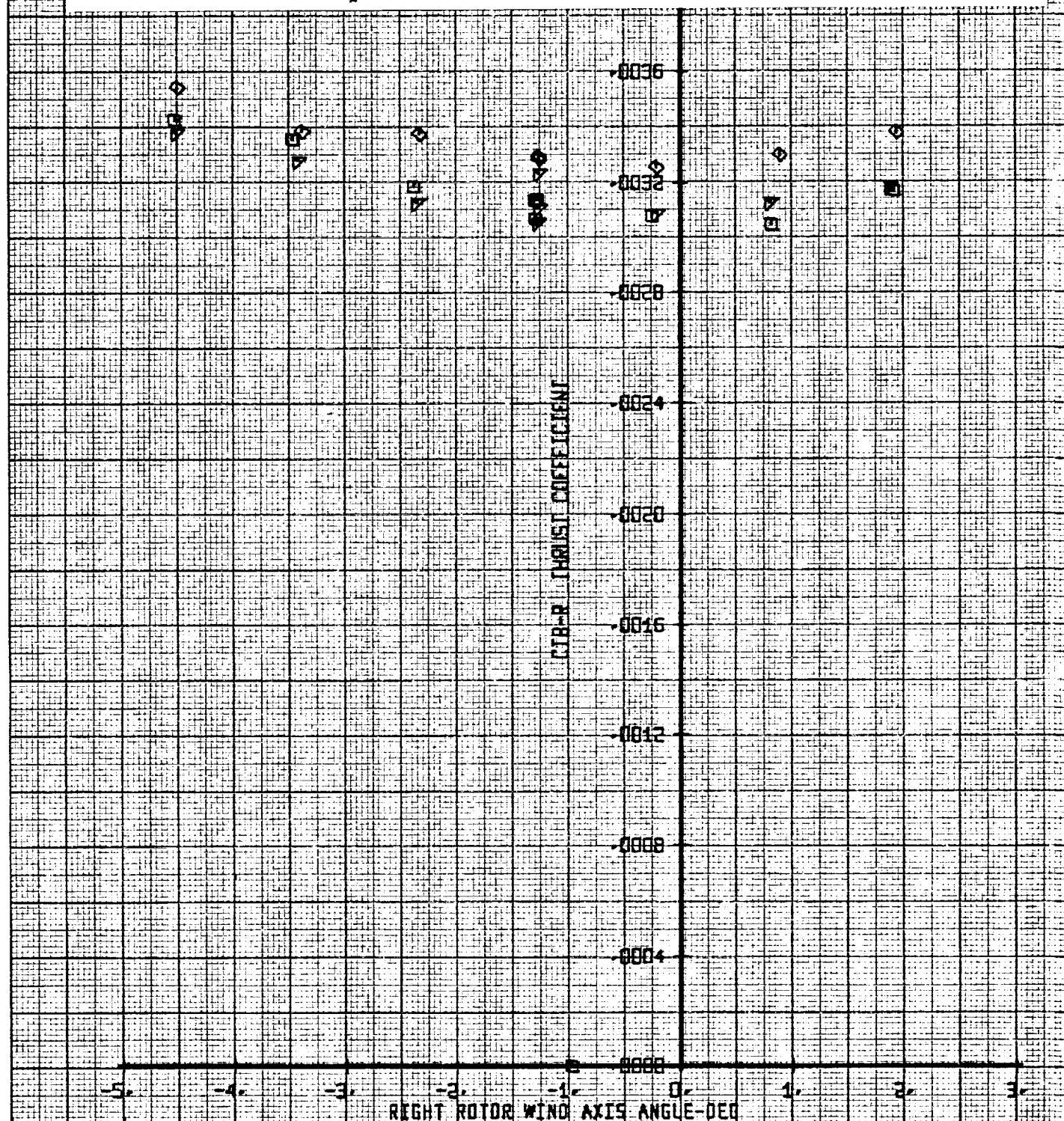
Figure 13-006. Left Rotor Yawing Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$



BYWT 182 VR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	159	-1	140	VARY	0
△	160	-1	140	VARY	10
◇	161	-1	140	VARY	20

Figure 13-007. Right Rotor Thrust Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$

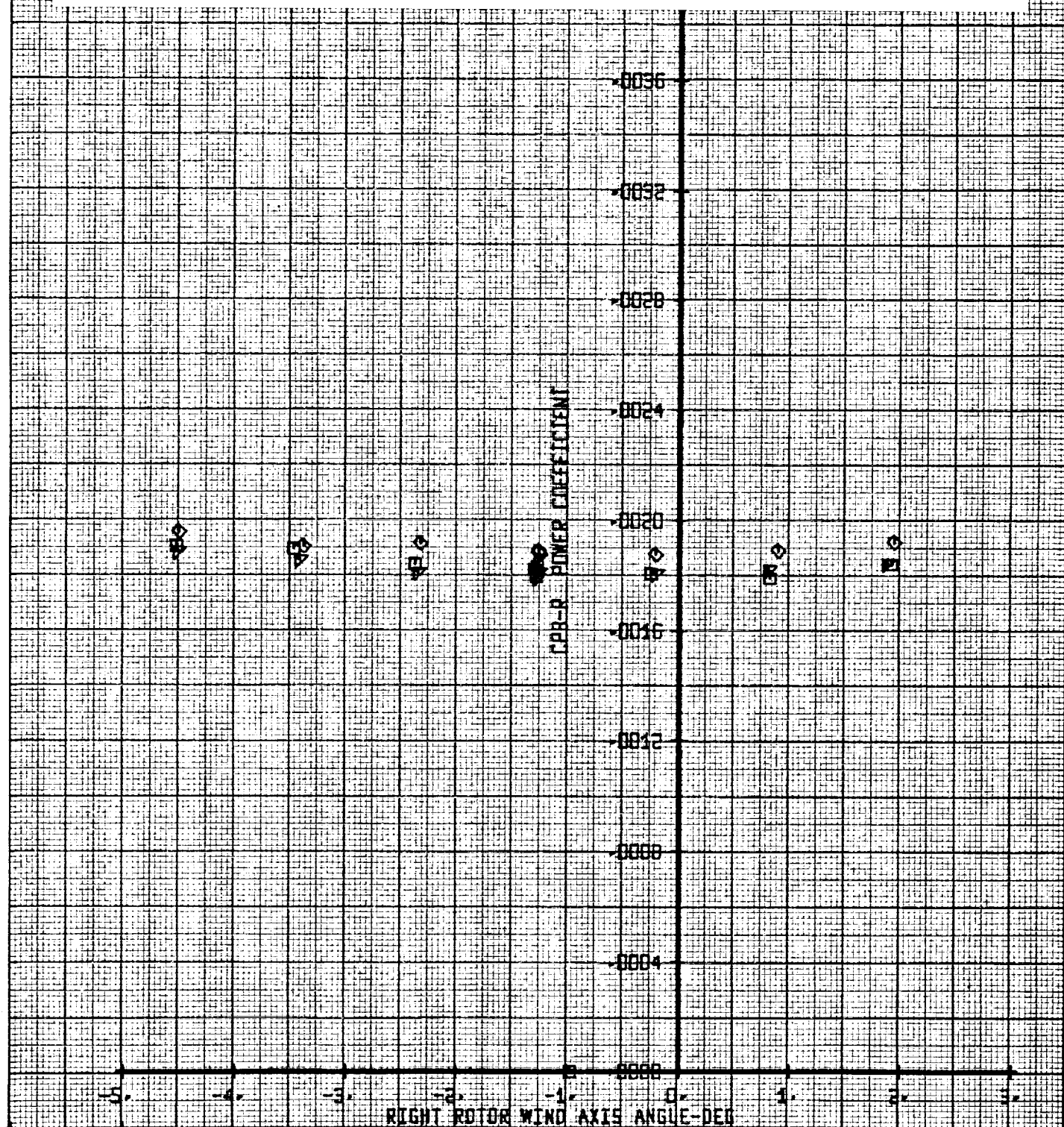


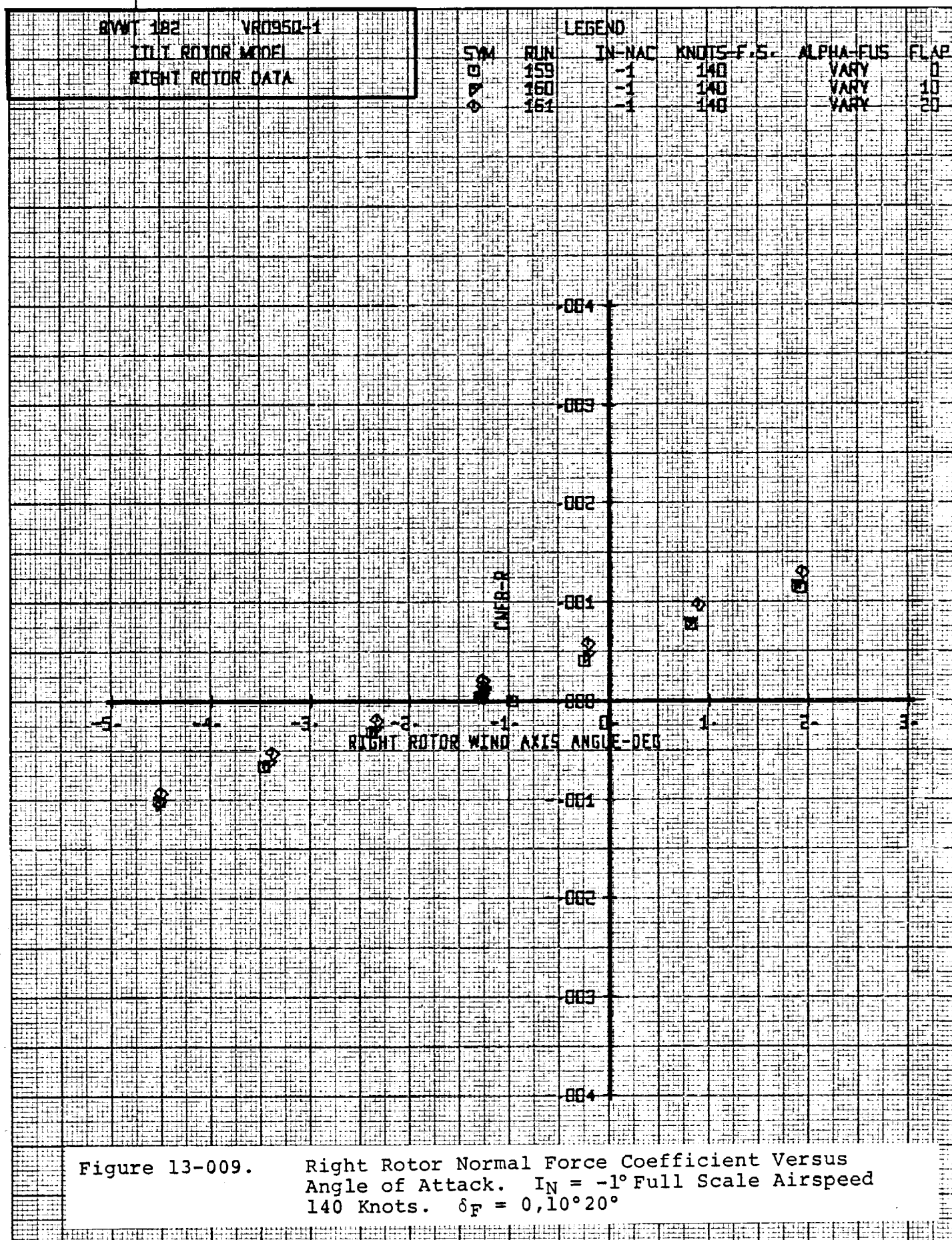
BVWT 182 VR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

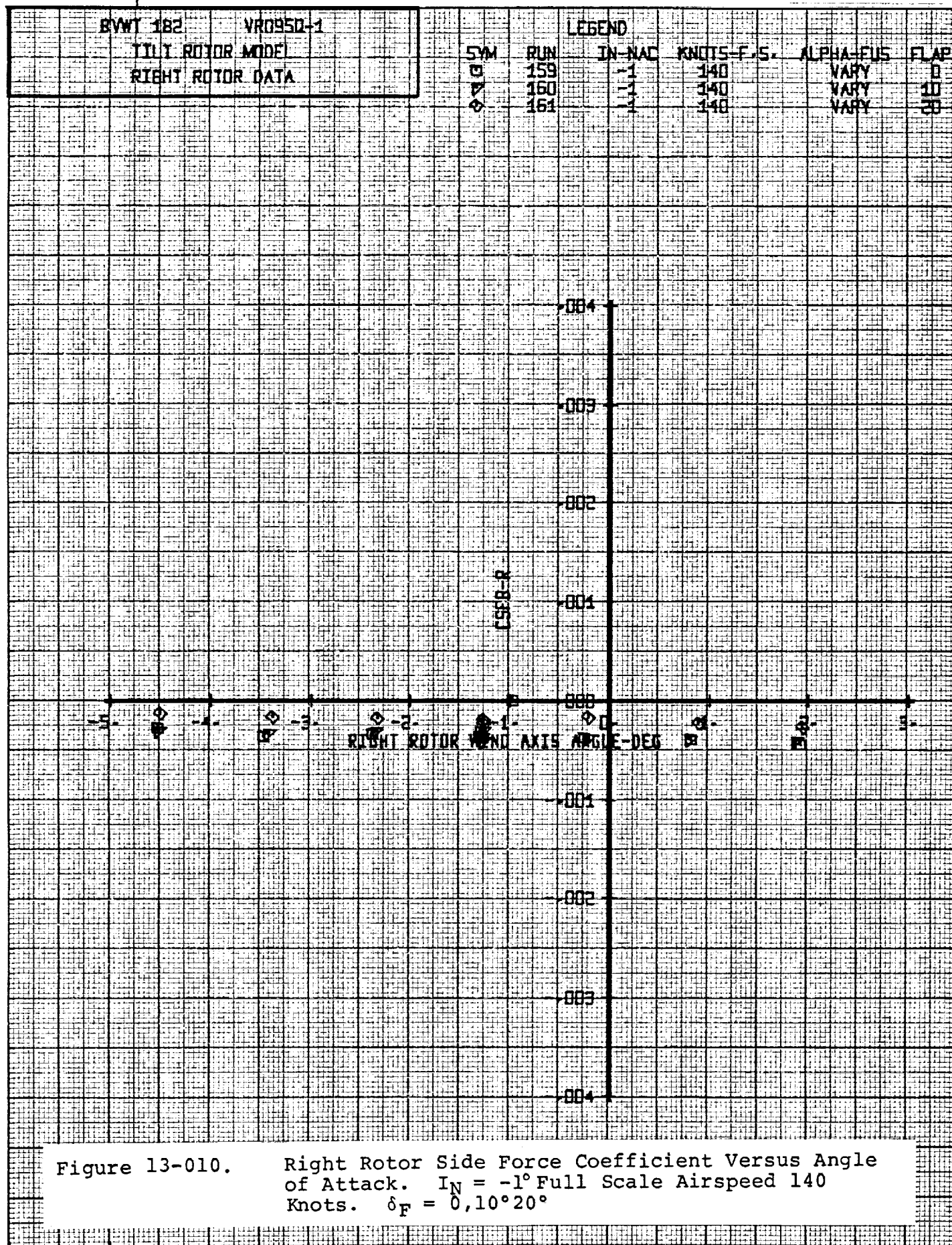
LEGEND

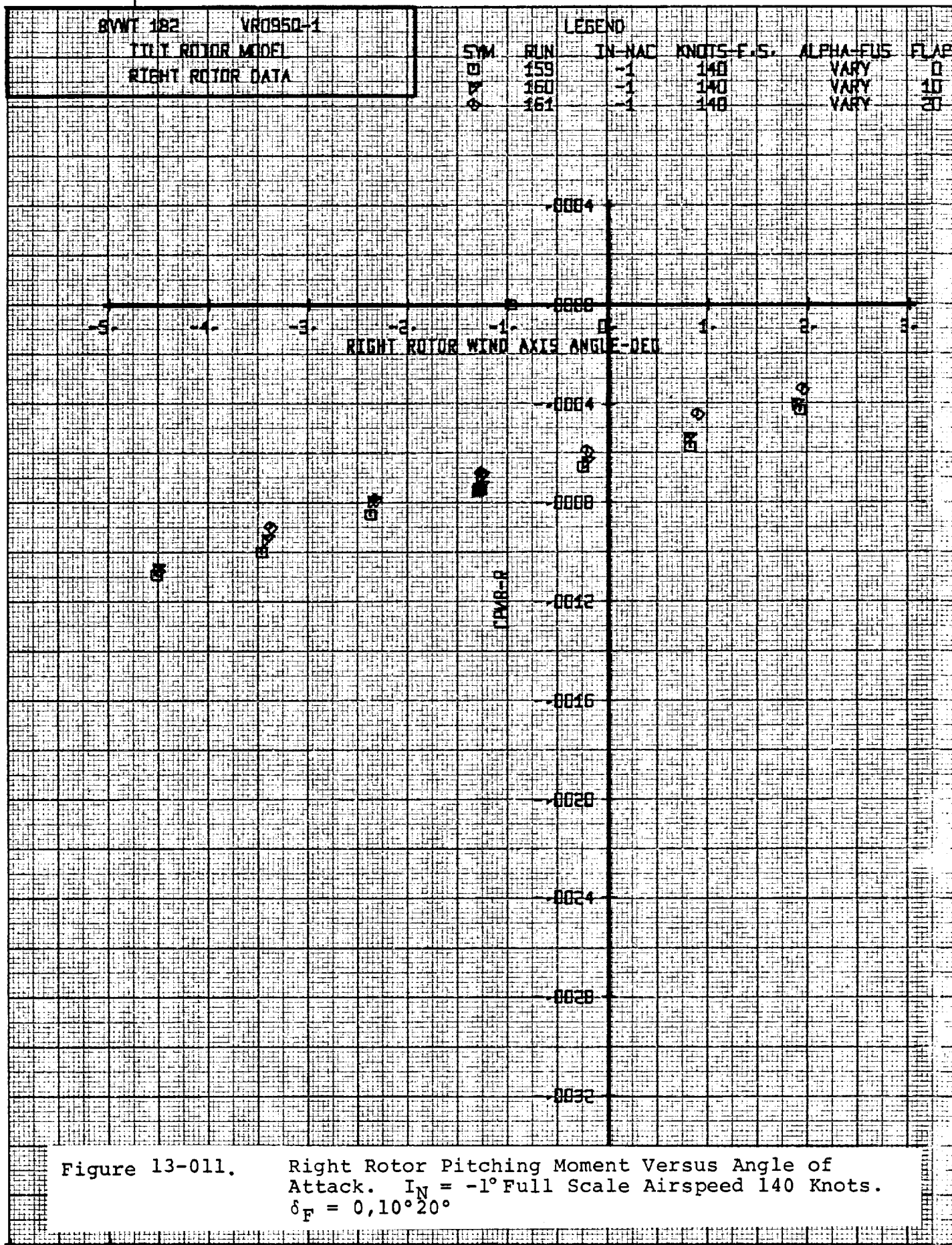
SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-DEG	FLAP
○	159	-1	140	VARY	0
○	160	-1	140	VARY	30
○	161	-1	140	VARY	20

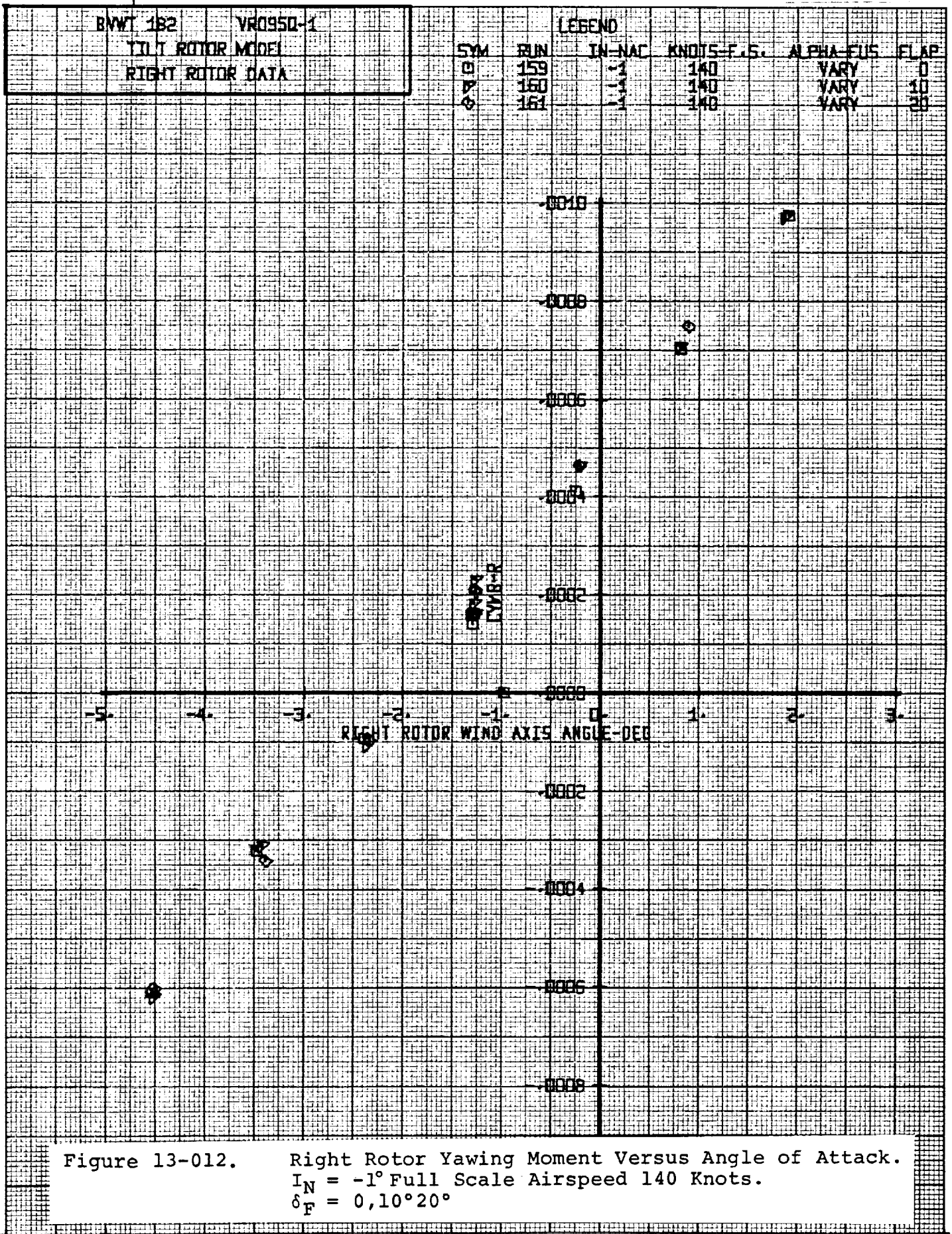
Figure 13-008. Right Rotor Power Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$











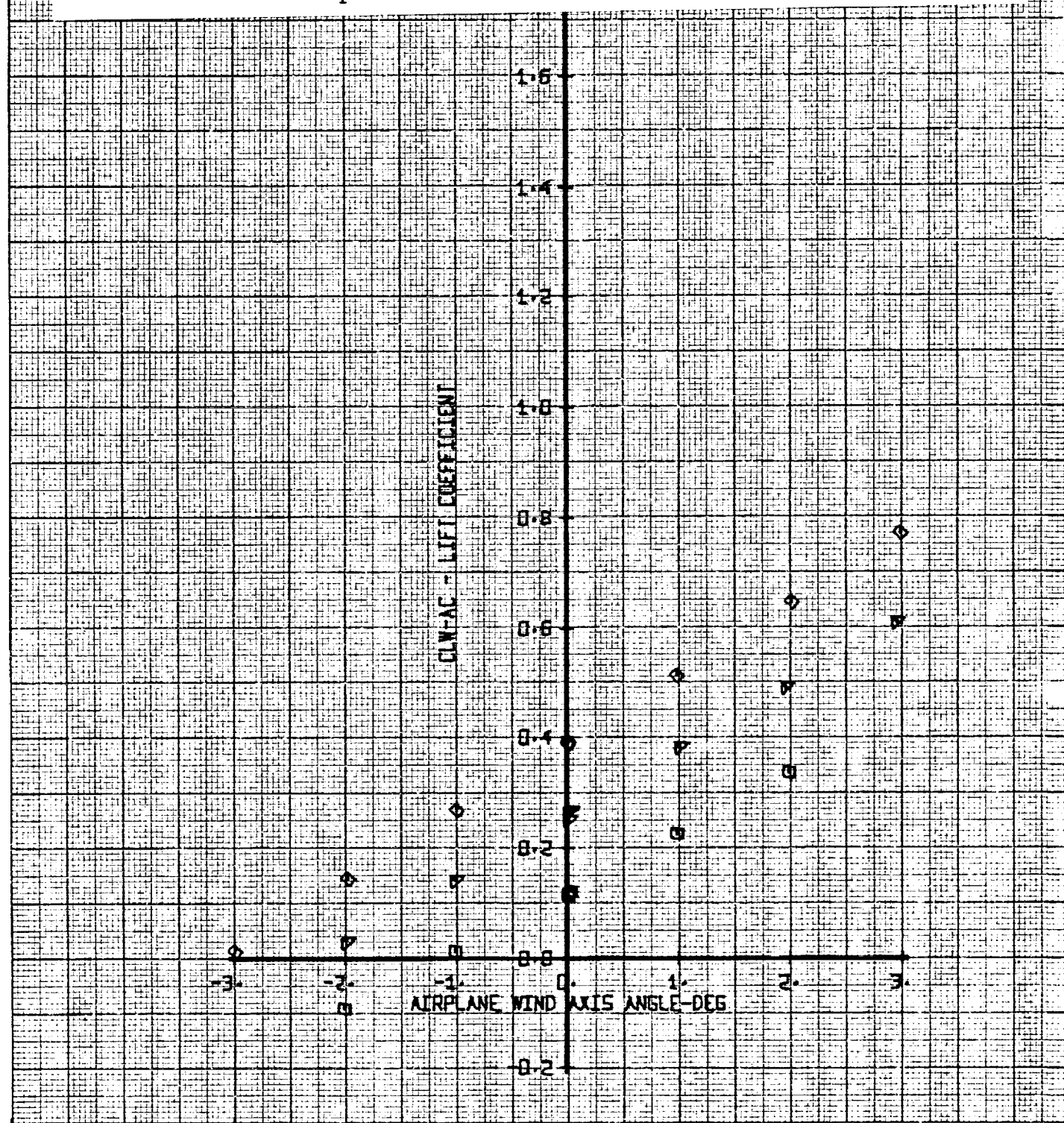
BVWT 182 VR0950-1

TILT ROTOR MODEL

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	159	-1	140	VARY	0
▽	160	-1	140	VARY	10
◇	161	-1	140	VARY	20

Figure 13-013. Aircraft Lift Coefficient Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$



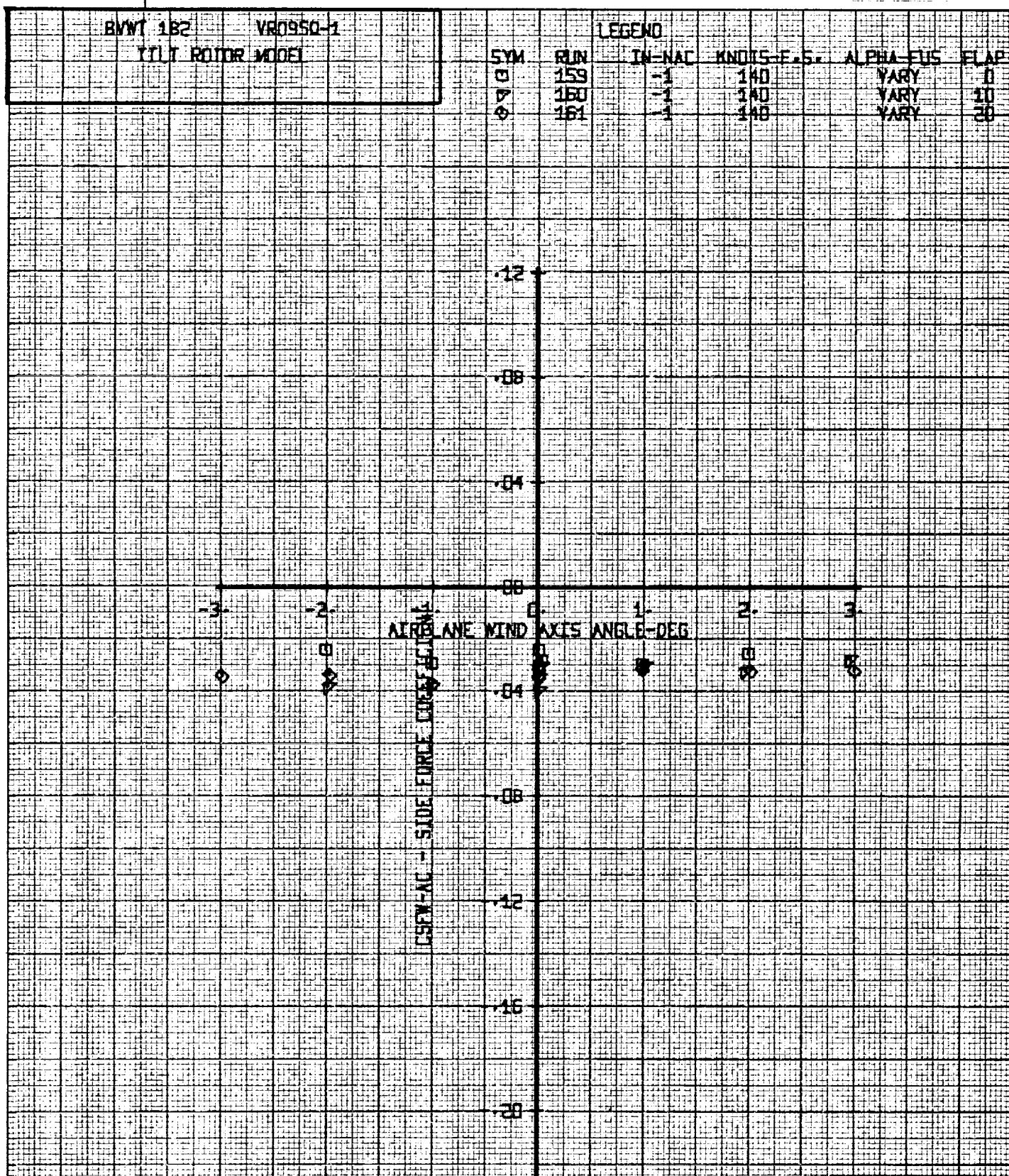


Figure 13-014. Aircraft Side Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots. $\delta_F = 0, 10^\circ, 20^\circ$

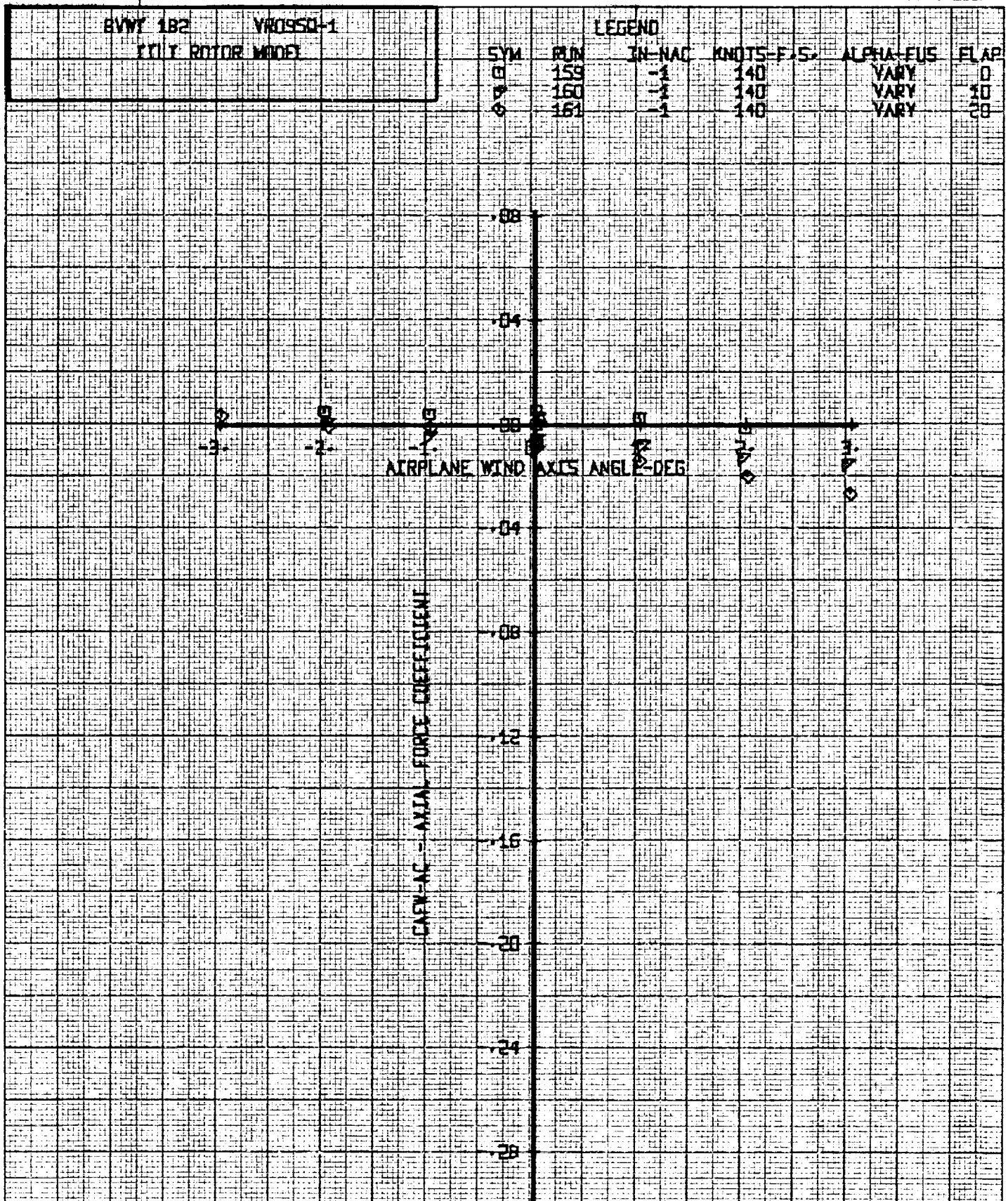


Figure 13-015. Aircraft Axial Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots. $\delta_F = 0, 10^\circ 20^\circ$

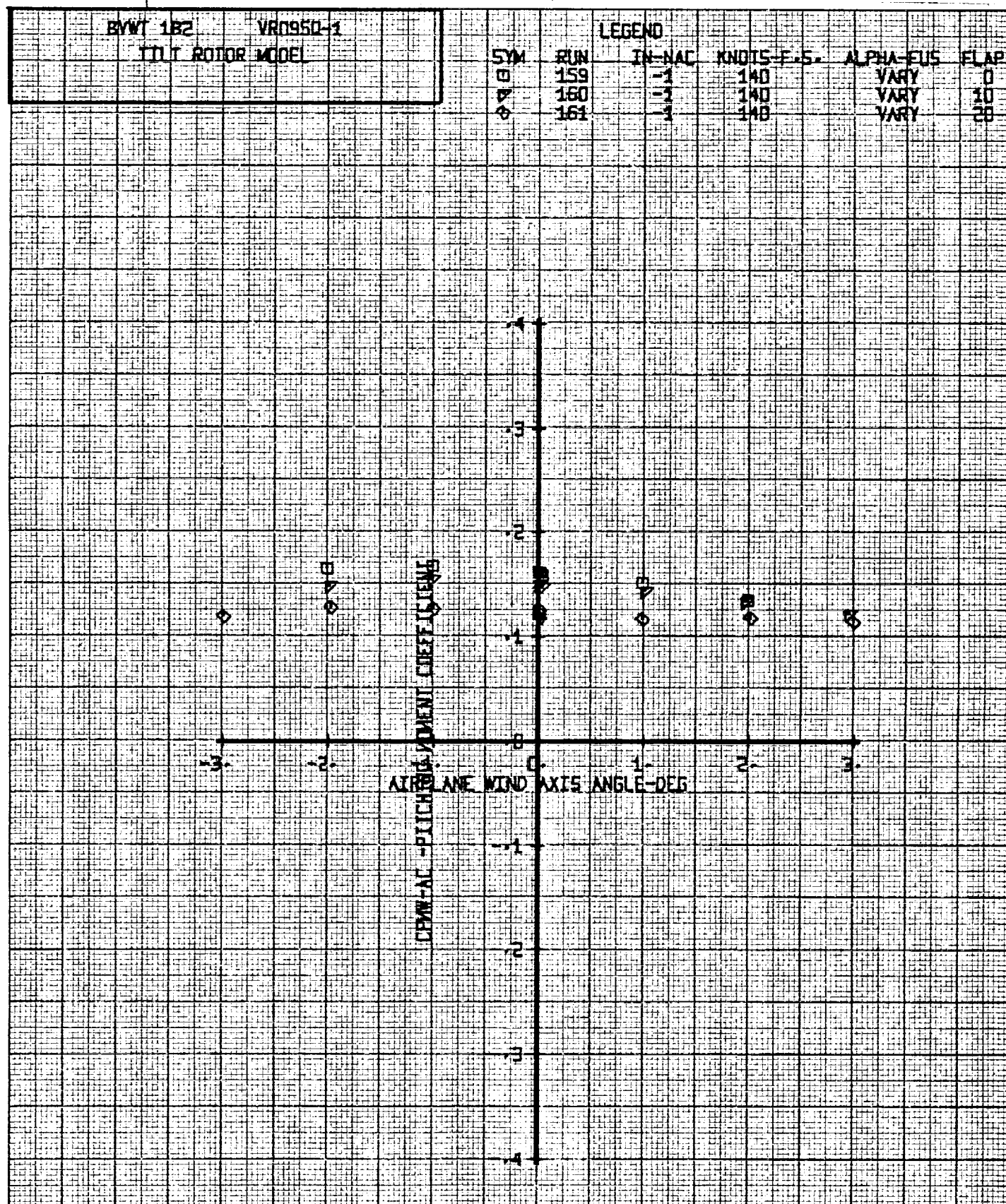
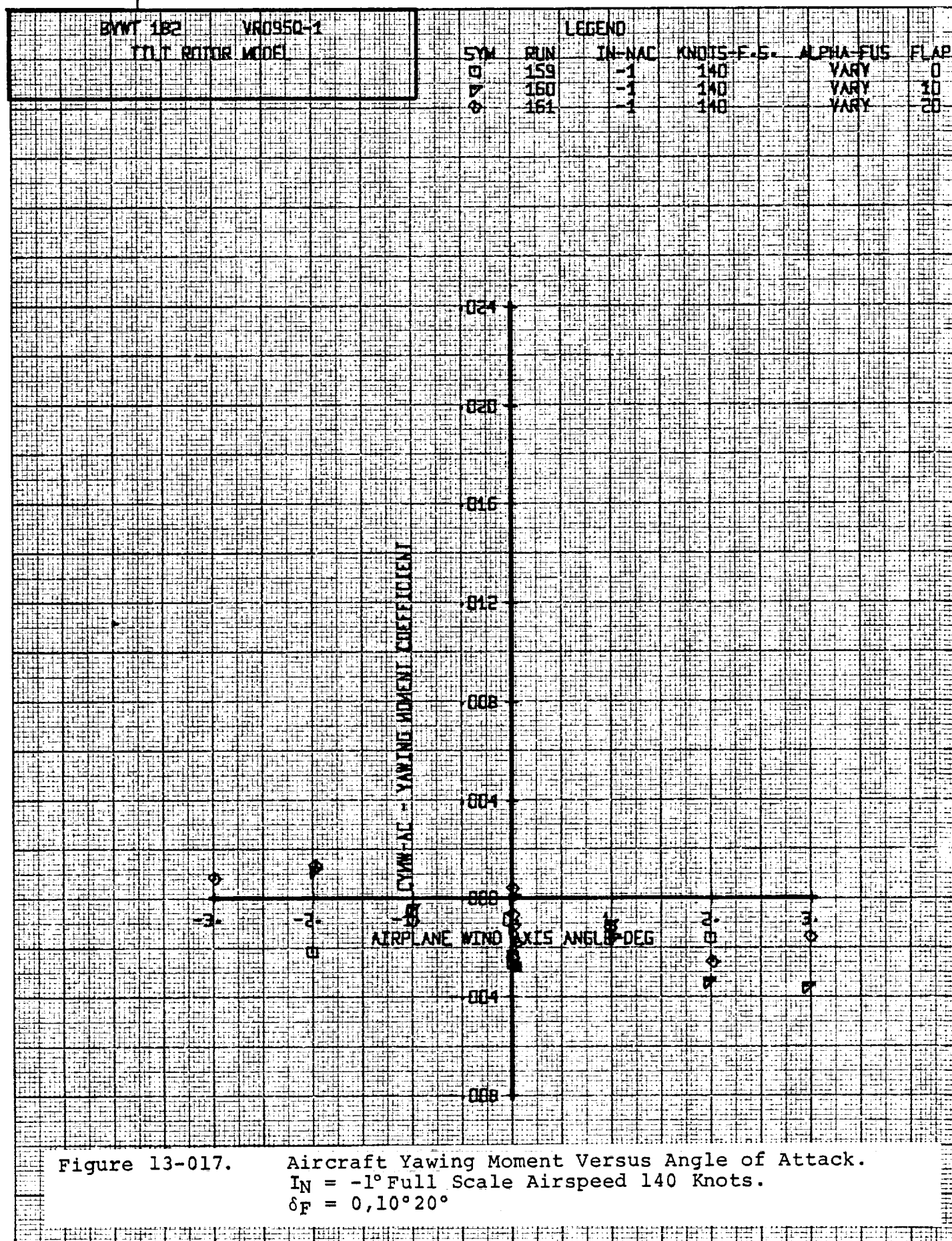


Figure 13-016. Aircraft Pitching Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.
 $\delta_F = 0, 10^\circ 20^\circ$



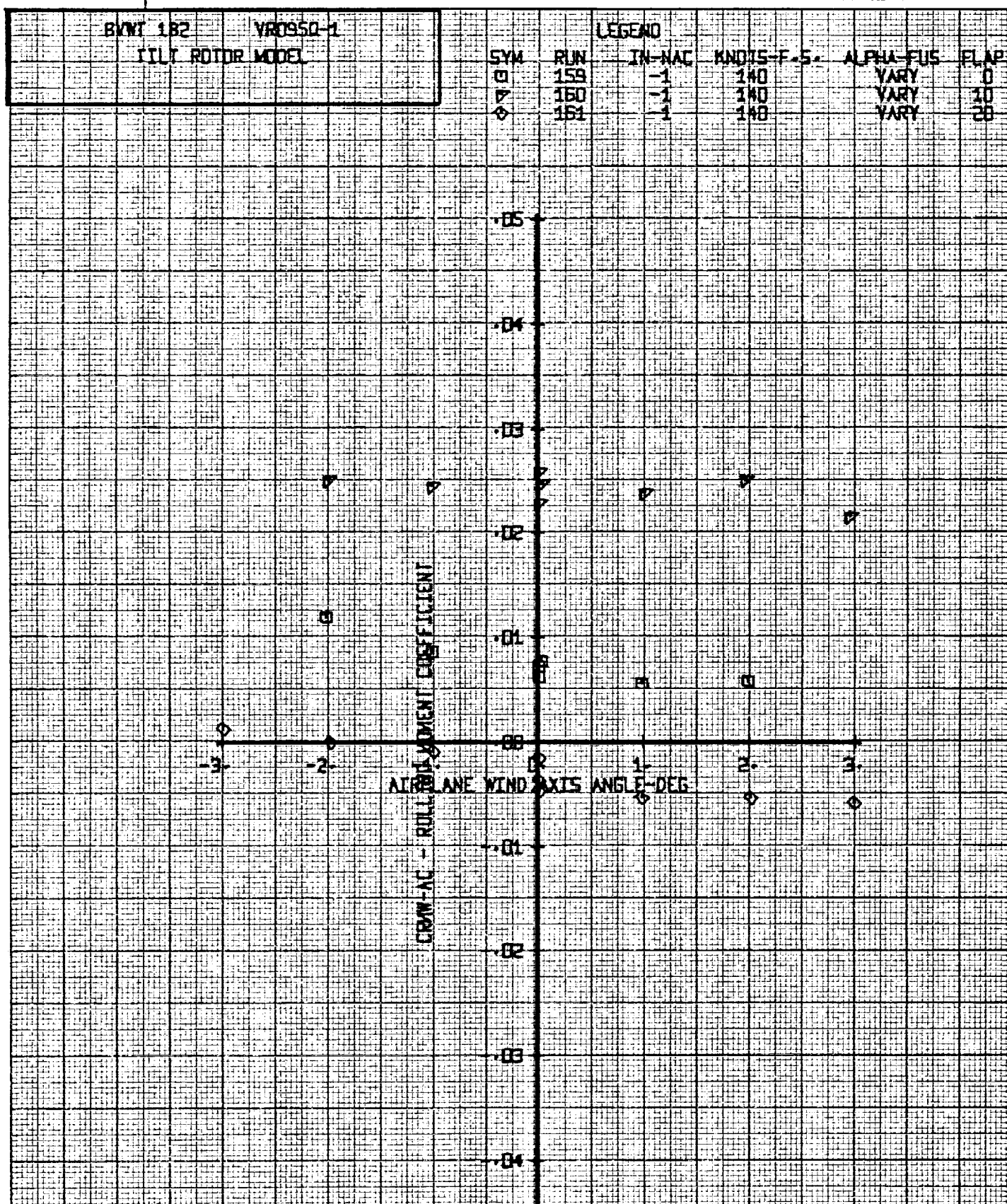


Figure 13-018. Aircraft Rolling Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.
 $\delta_F = 0, 10^\circ 20^\circ$

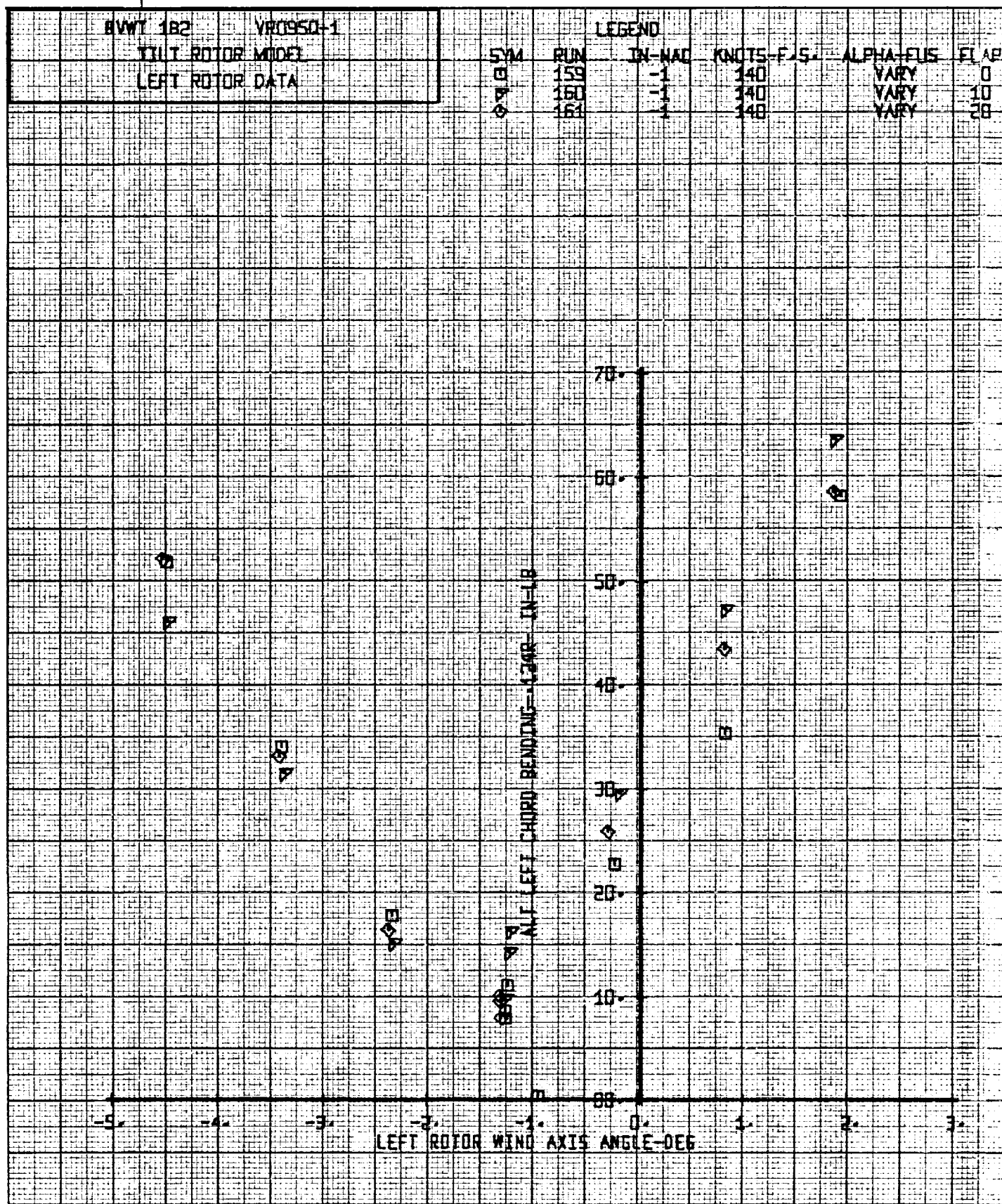
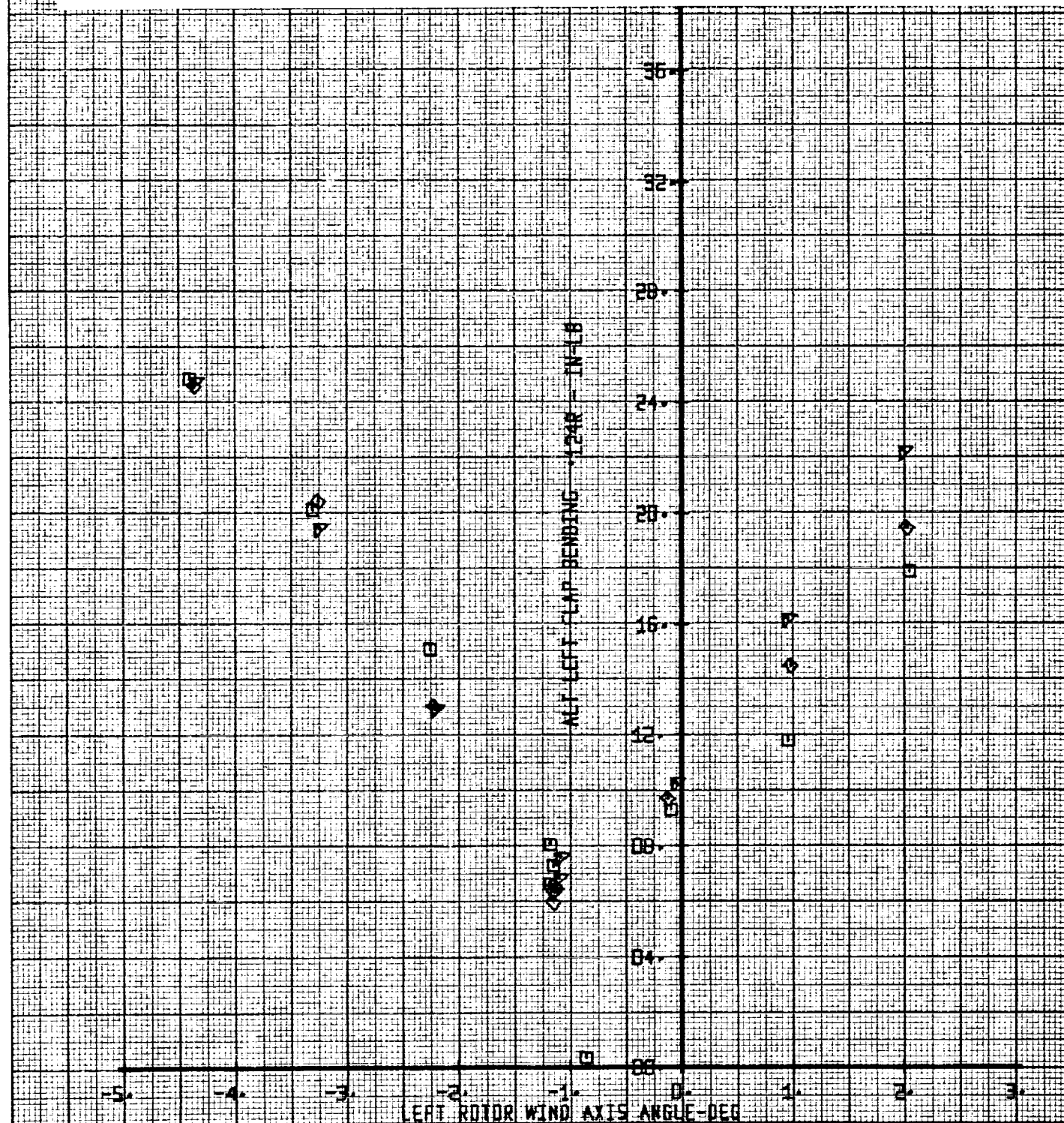


Figure 13-019. Alt. Left Chord Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.
 $\delta F = 0, 10^\circ 20^\circ$

RWY 182		VR0950-1	LEGEND					
TILT ROTOR MODEL			SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
LEFT ROTOR DATA			□	159	-1	140	VARY	0
			▤	160	-1	140	VARY	10
			◇	161	-1	148	VARY	20

Figure 13-020. Alt. Left Flap Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots. $\delta_F = 0, 10^\circ, 20^\circ$



BWV 182 YR0950-1

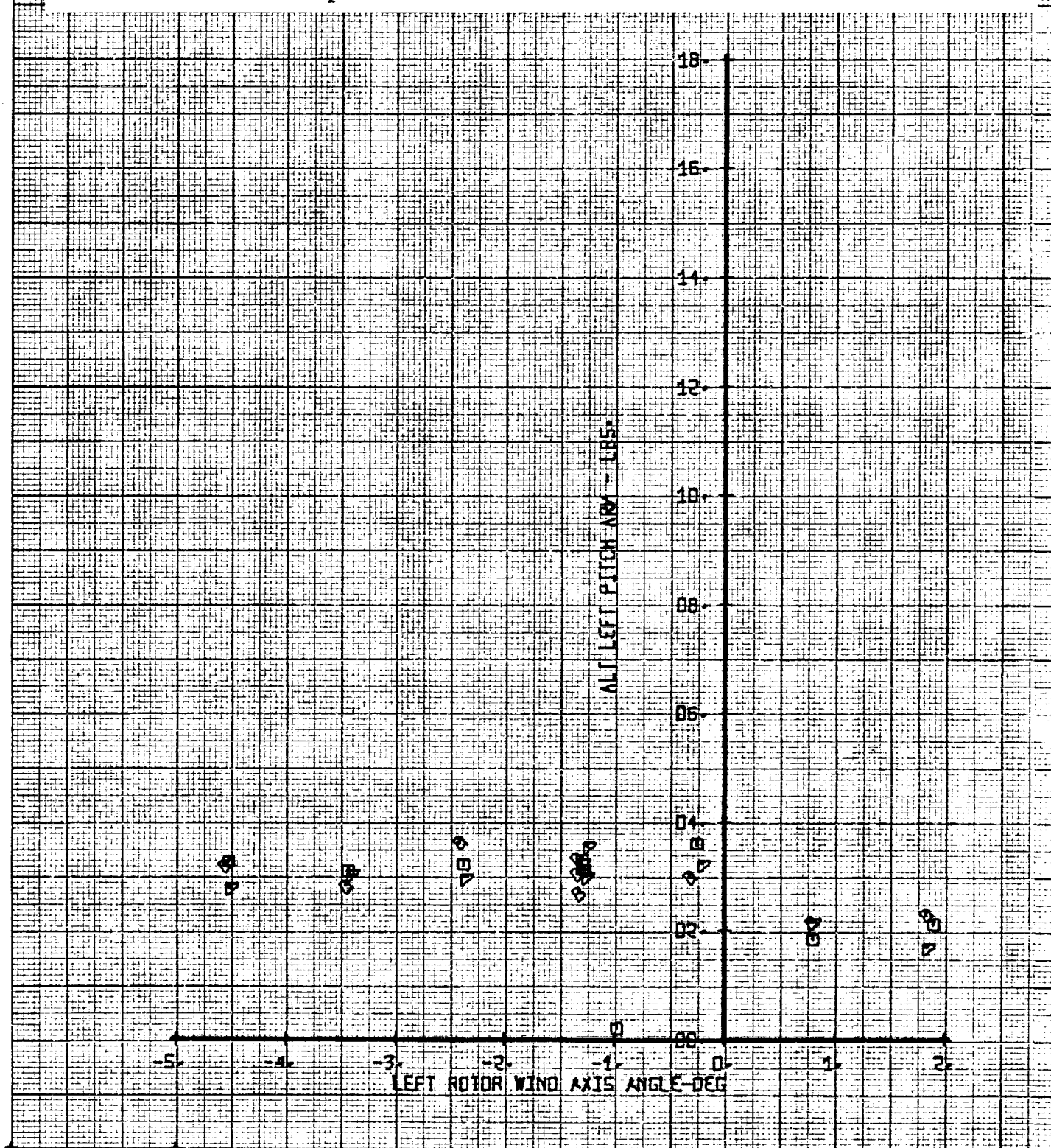
TILT ROTOR MODEL

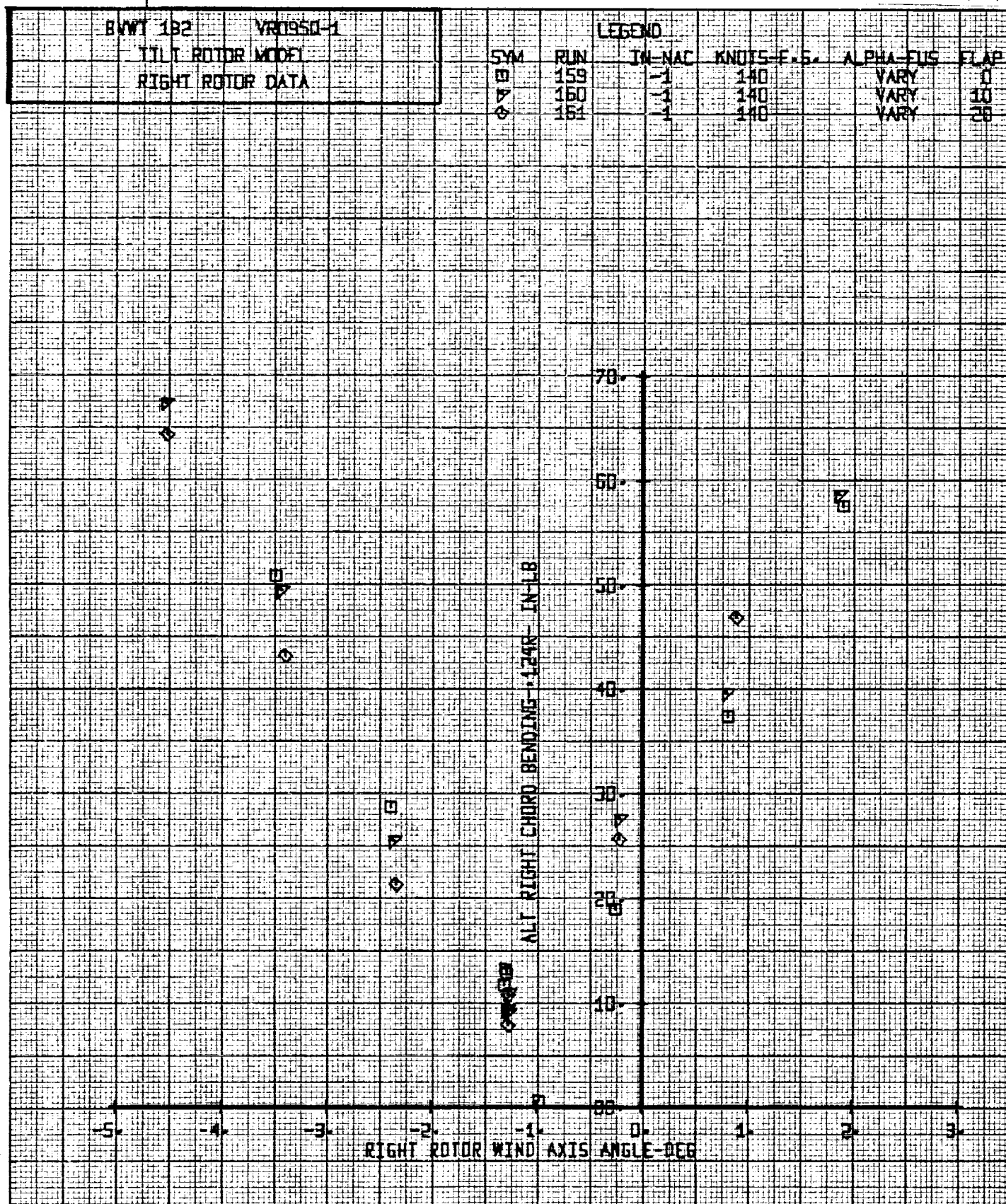
LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-E-S.	ALPHA-FLIP	FLAP
0	159	-1	140	VARY	0
1	160	-1	140	VARY	10
2	161	-1	140	VARY	20

Figure 13-021. Alt. Left Pitch Link Load Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$





BWT 182 YR0950-1

THE ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

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ALPHA-FLU

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159

-1-

140

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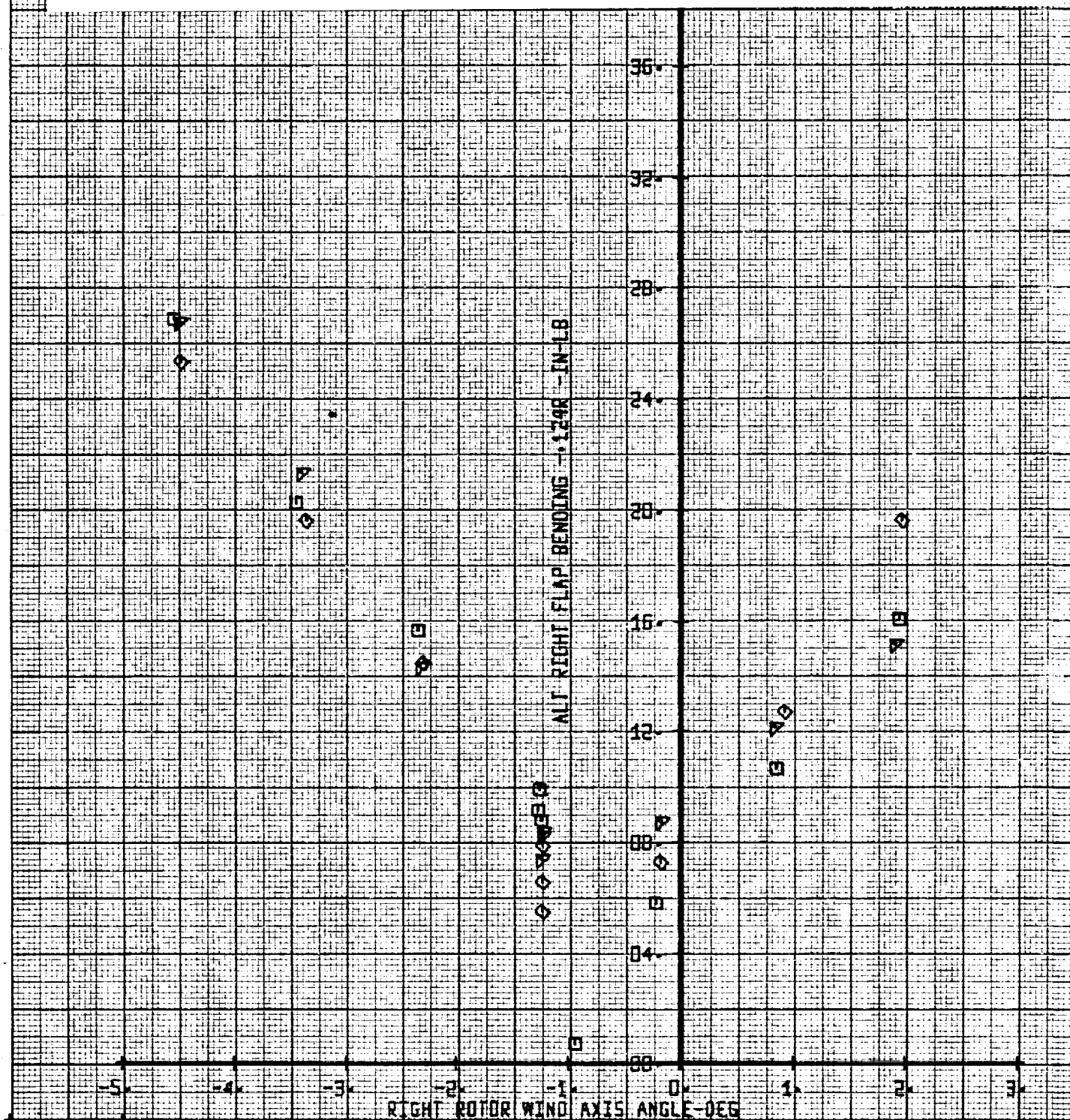
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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140	
140	

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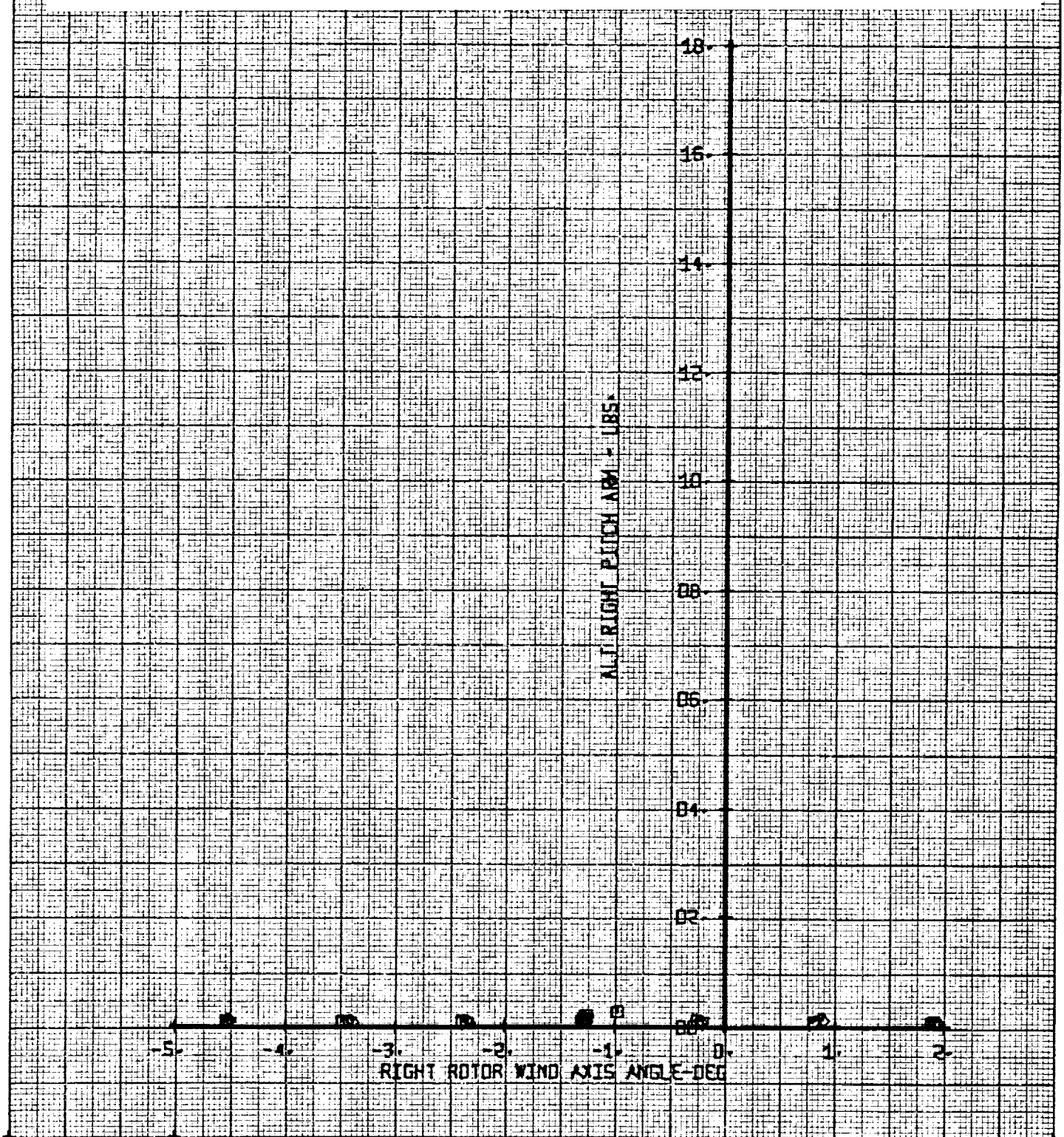
24

Figure 13-023. Alt. Right Flap Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots. $\delta_F = 0, 10^\circ, 20^\circ$



BWT 1B2	YR095Q-1	LEGEND				
TILT ROTOR MODEL	SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FLG	FLAP
RIGHT ROTOR DATA	0	159	-1	140	VARY	0
	1	160	-1	140	VARY	10
	2	161	-1	140	VARY	20

Figure 13-024. Alt. Right Pitch Link Load Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots. $\delta_F = 0, 10^\circ, 20^\circ$



BWNT 182 YR0950-1

TILT ROTOR MODE

LEFT ROTOR DATA

LEGEND

5M

RUN

IN-MAC

KNITS-F-5

ALPHA-FU5

FLAP

四

162

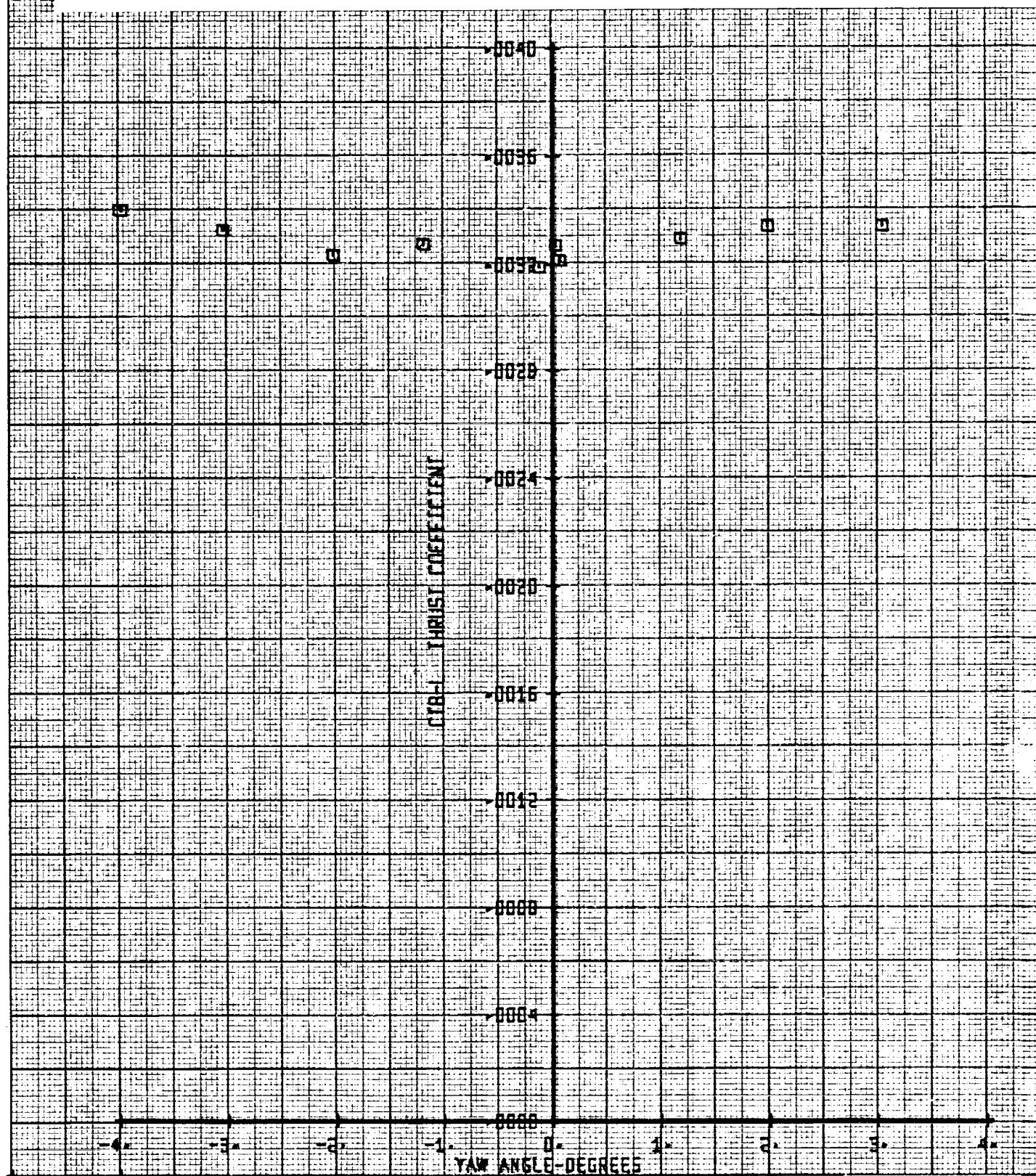
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140

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Figure 13-025. Left Rotor Thrust Coefficient Versus Yaw Angle
 ° Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



51

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BVWT	1B2

BWT 182	VR0950-1
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TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

541
D

RUN
 152

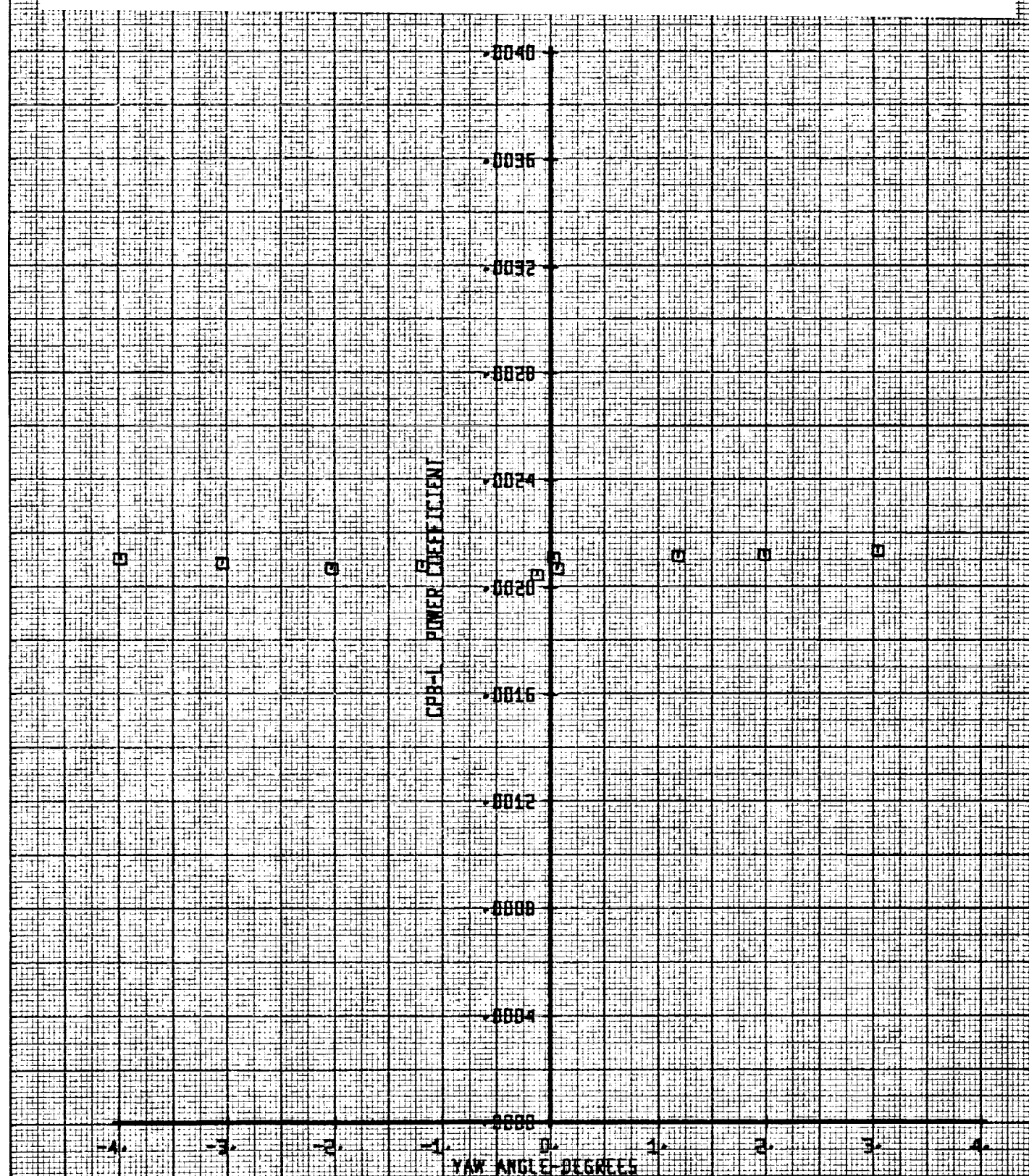
IN-NAF

KNIGHTS-FLEE

ALPHA-E115

FLAP

Figure 13-026. Left Rotor Power Coefficient Versus Yaw Angle
~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



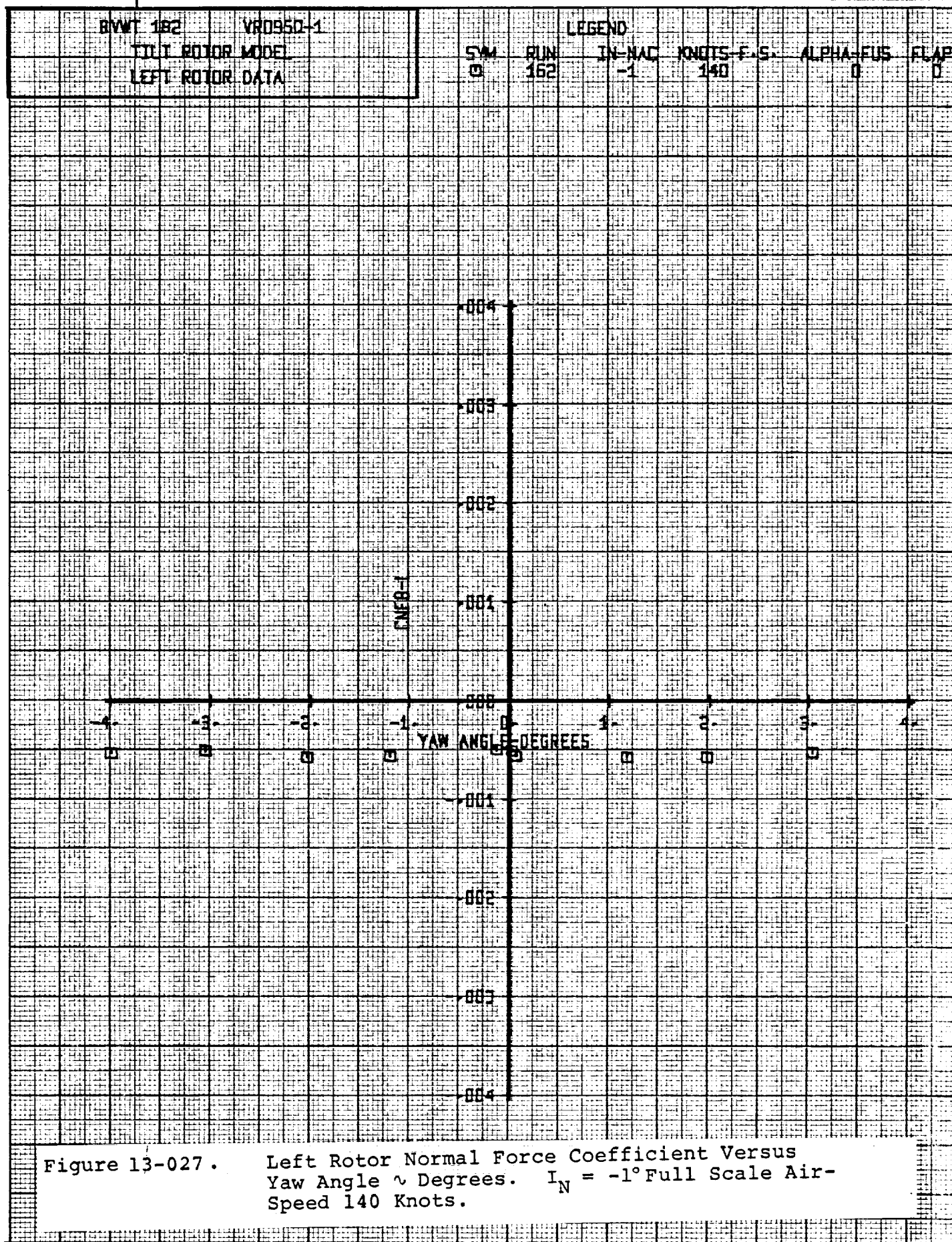


Figure 13-027. Left Rotor Normal Force Coefficient Versus Yaw Angle \sim Degrees. $I_N = -1^\circ$ Full Scale Air-Speed 140 Knots.

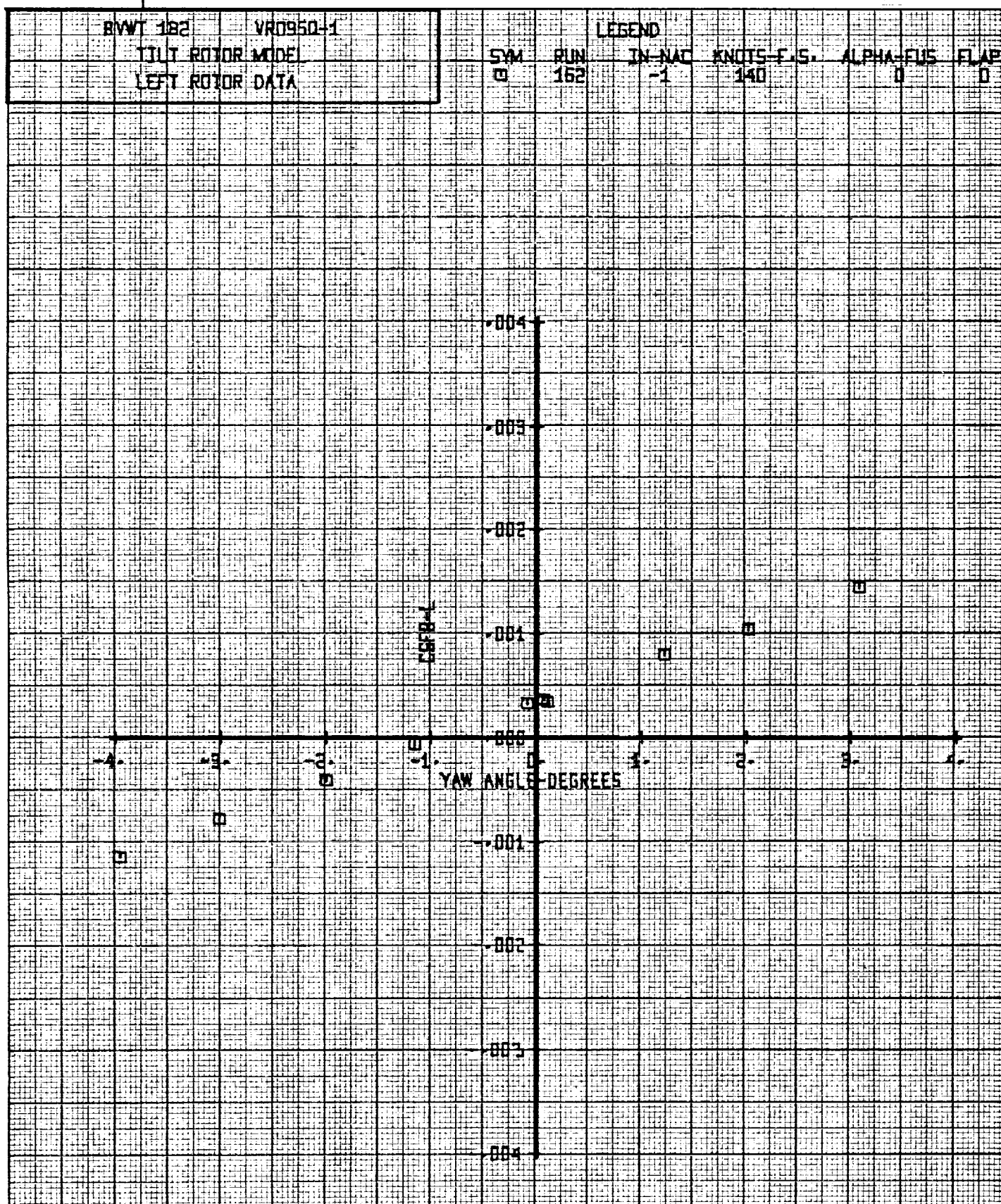


Figure 13-028. Left Rotor Side Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

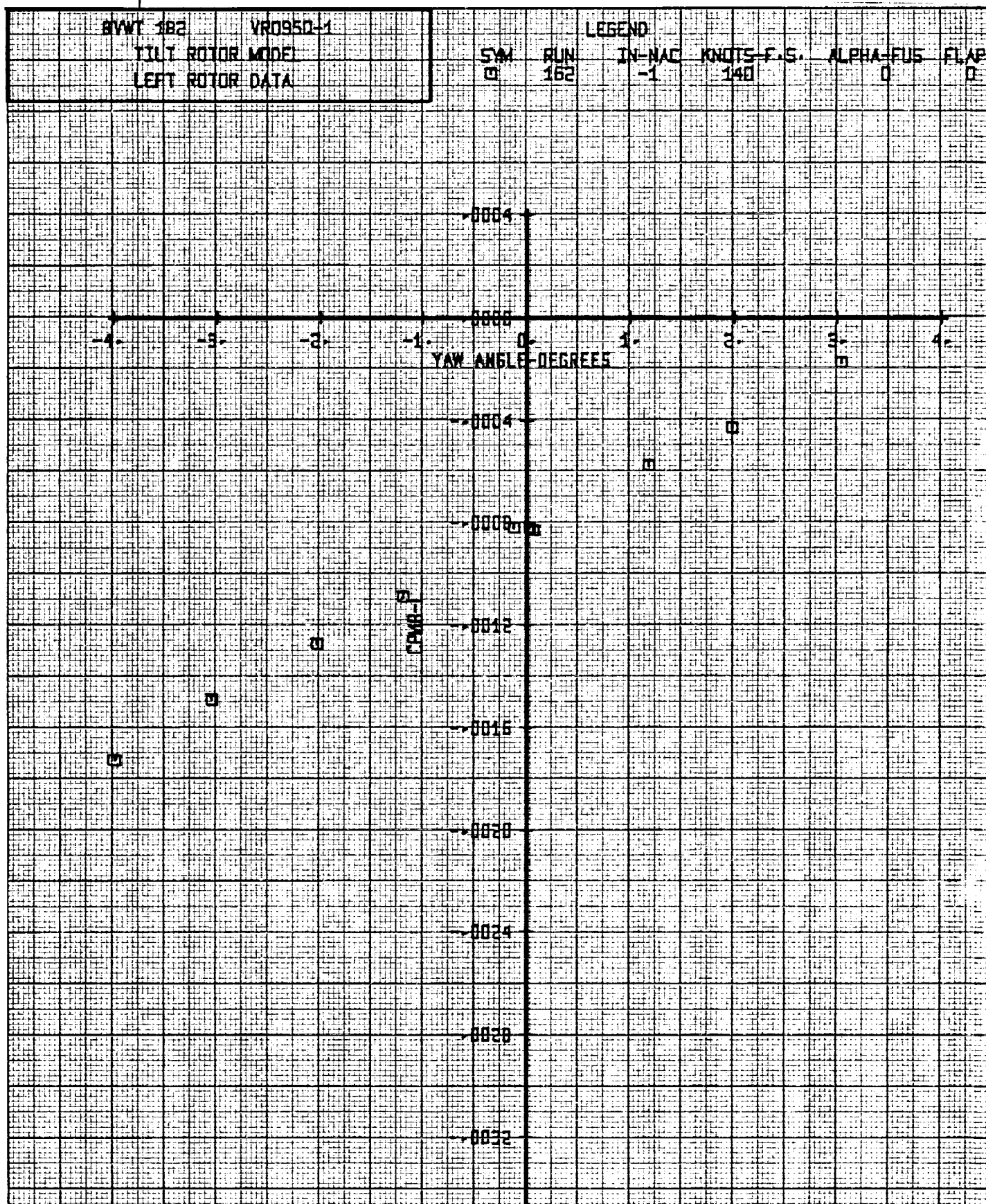


Figure 13-029. Left Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

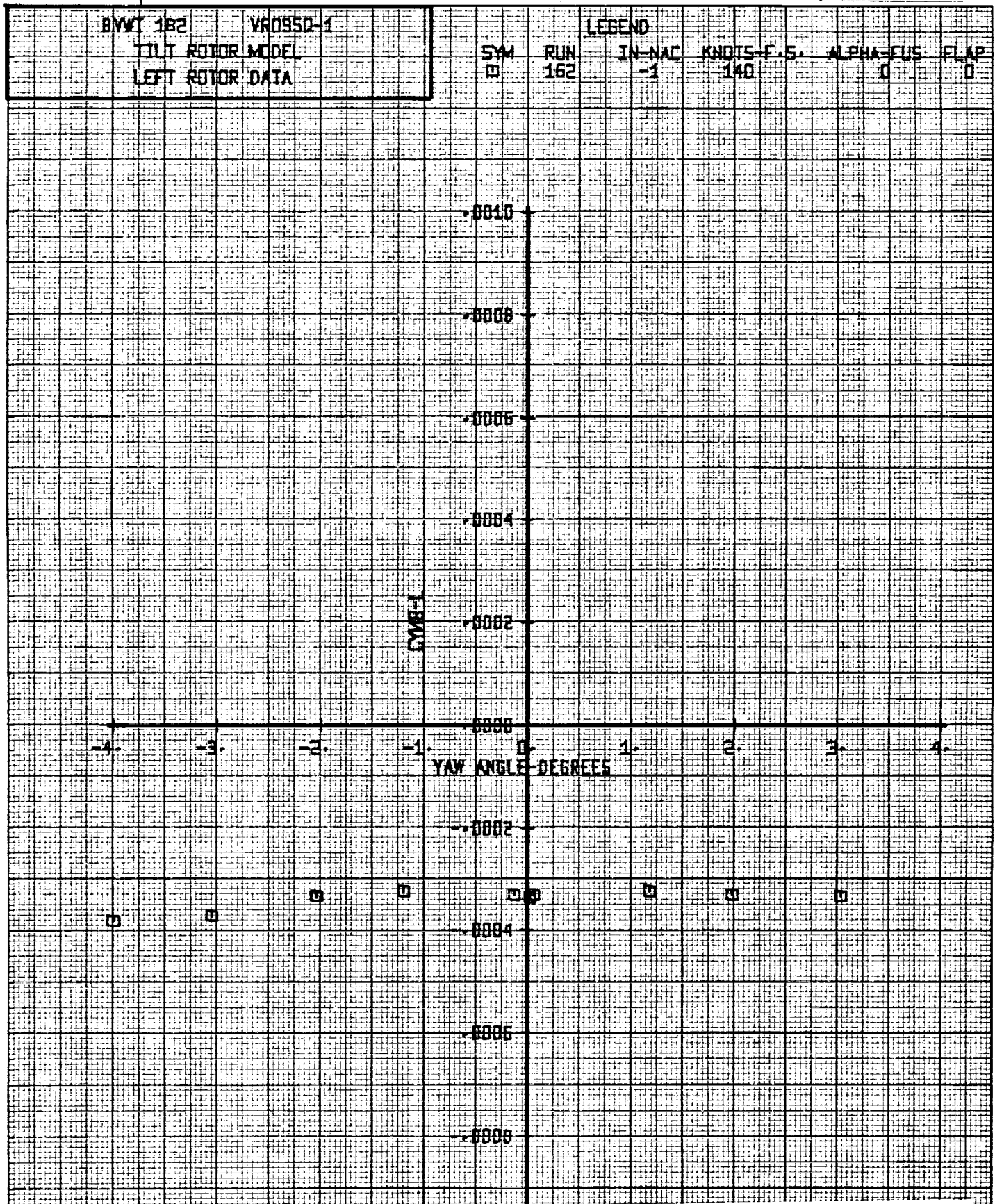


Figure 13-030. Left Rotor Yawing Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

BVWT 182 VR0950-1

TILT ROTOR MODE

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-HAC

KNOTS-F.S.

ALPHA-FUS

FLAP

0

162

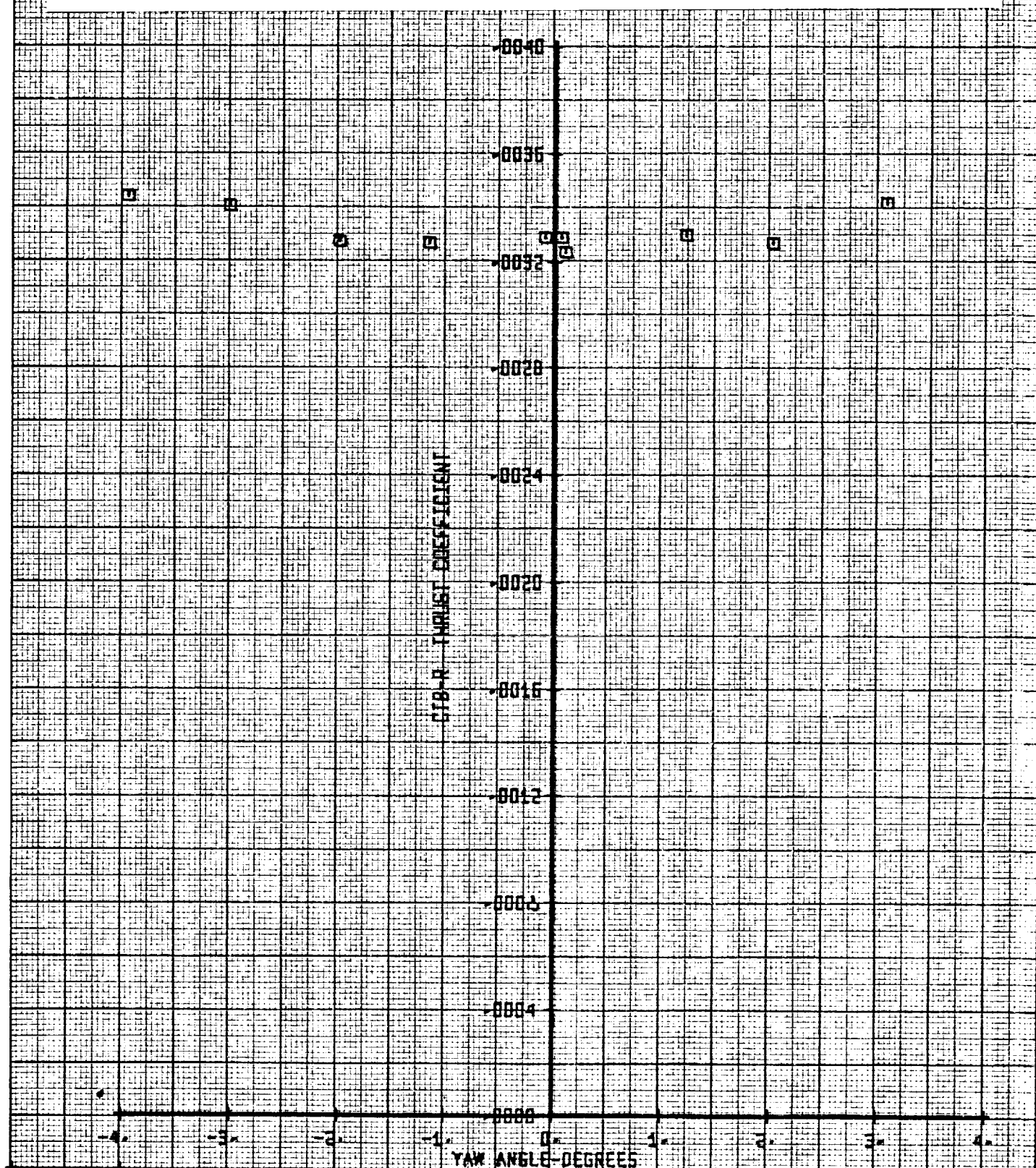
-1

140

0

0

Figure 13-031. Right Rotor Thrust Coefficient Versus Yaw Angle
 γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



BWV 182 VR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

182

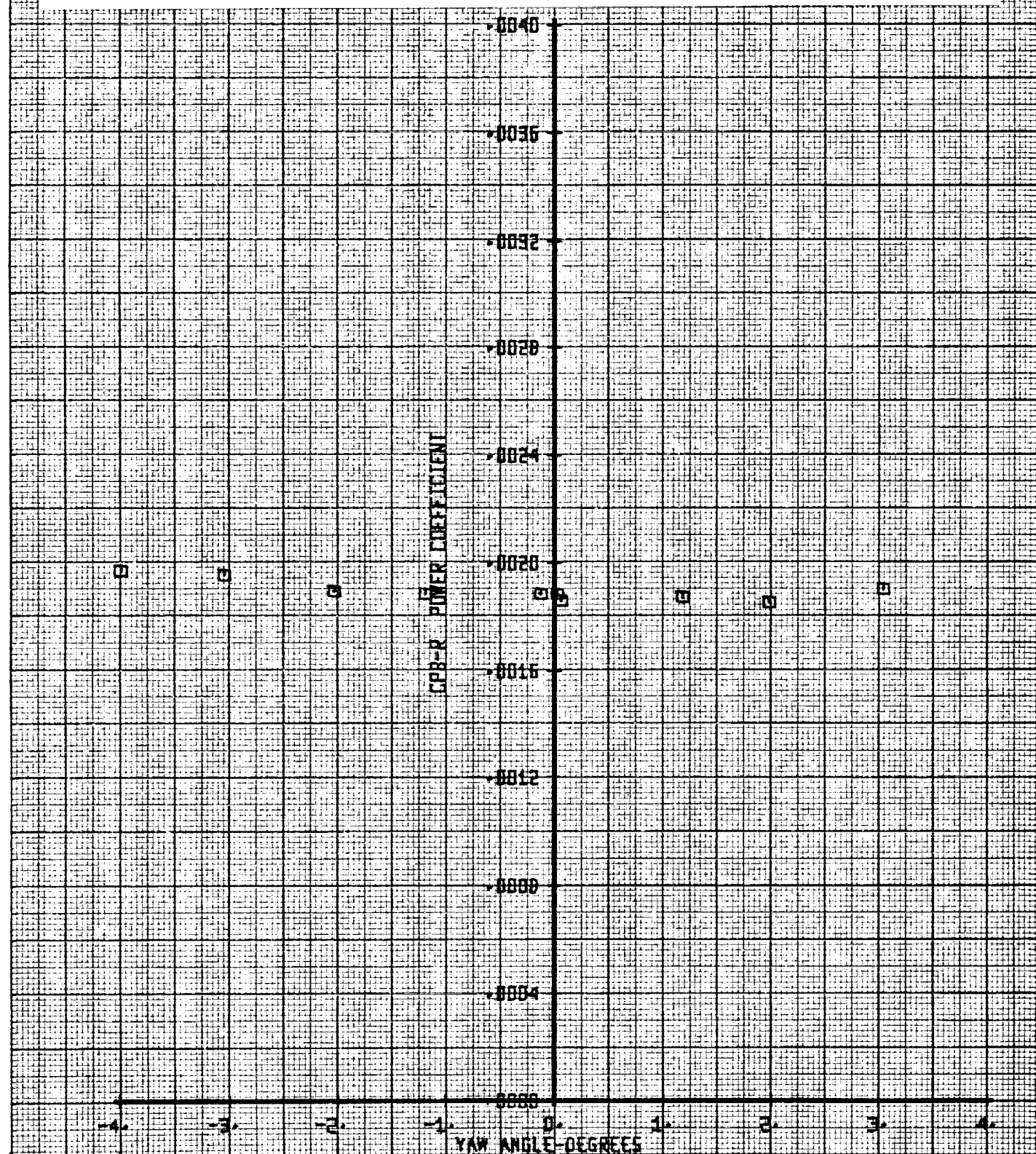
-1

140

0

0

Figure 13-032. Right Rotor Power Coefficient Versus Yaw Angle
 ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140
 Knots.



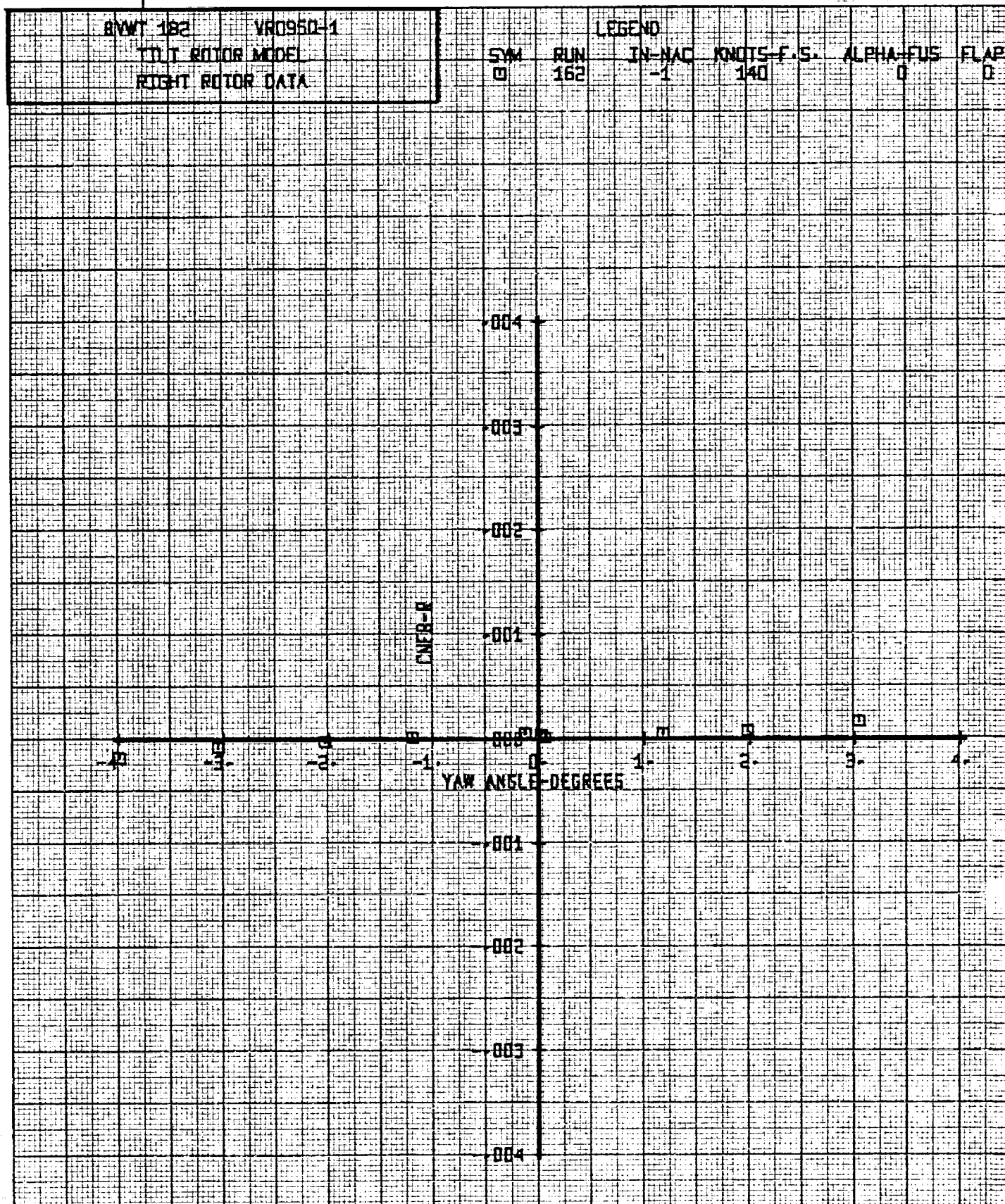


Figure 13-033. Right Rotor Normal Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

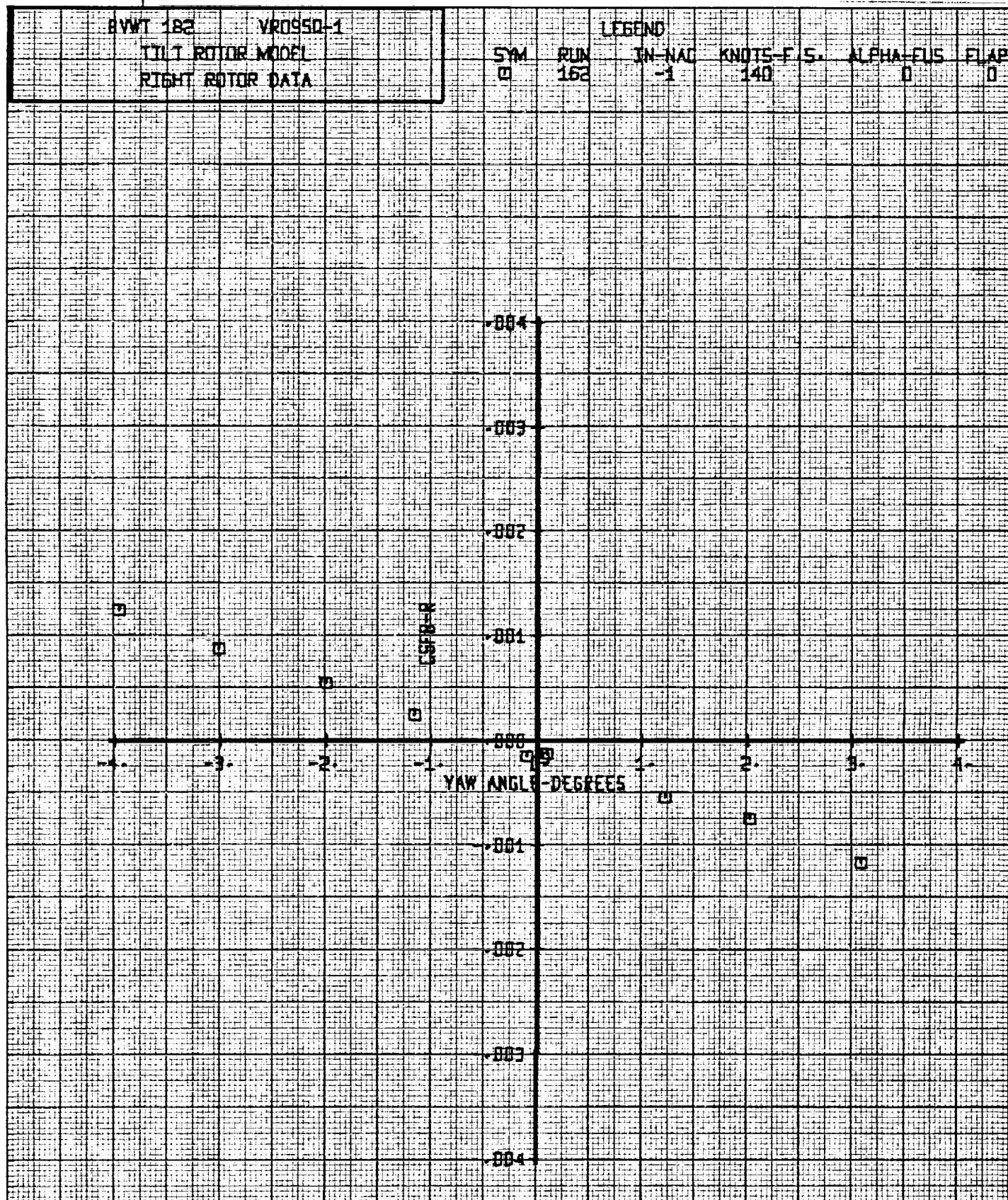


Figure 13-034. Right Rotor Side Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

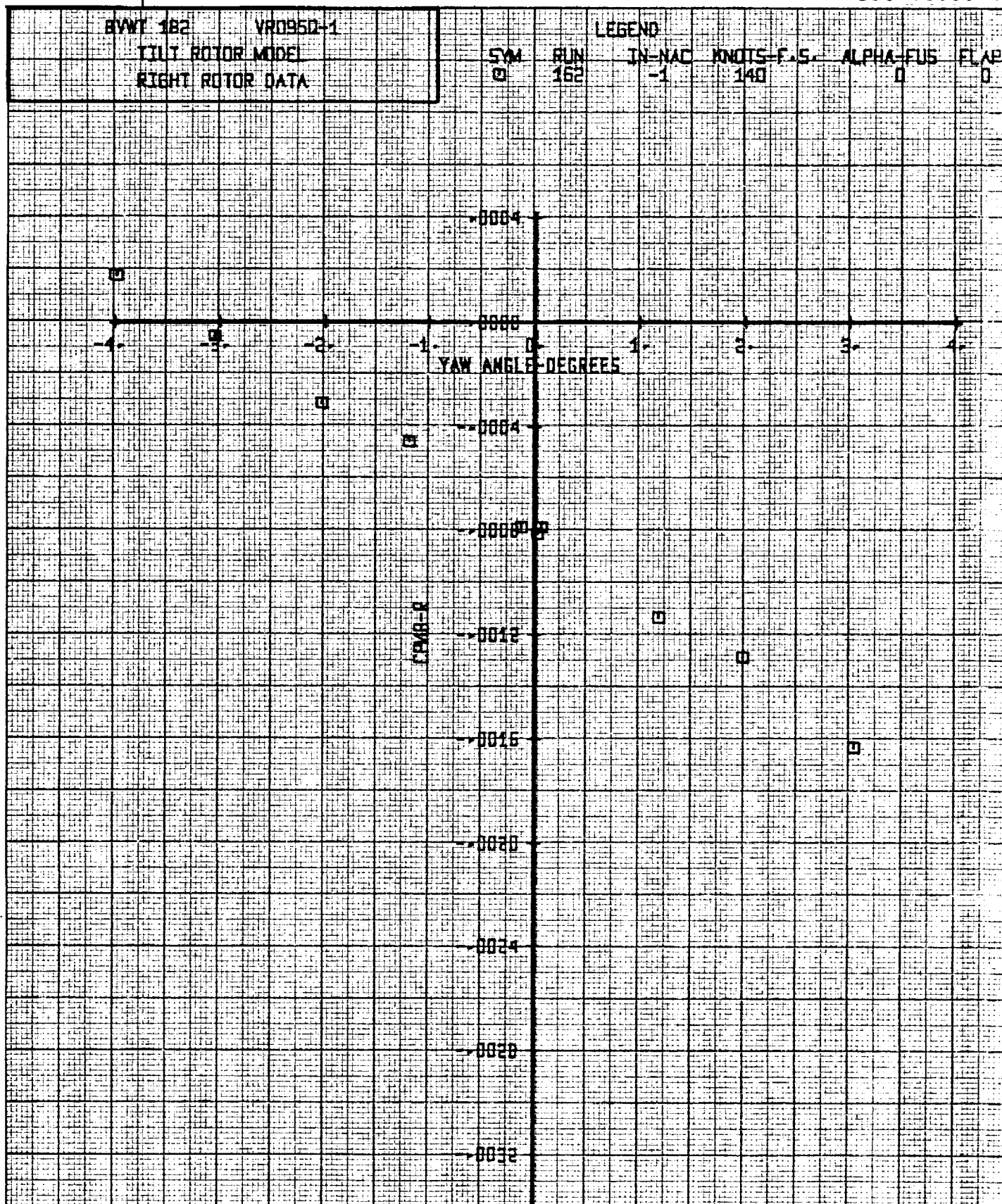


Figure 13-035. Right Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

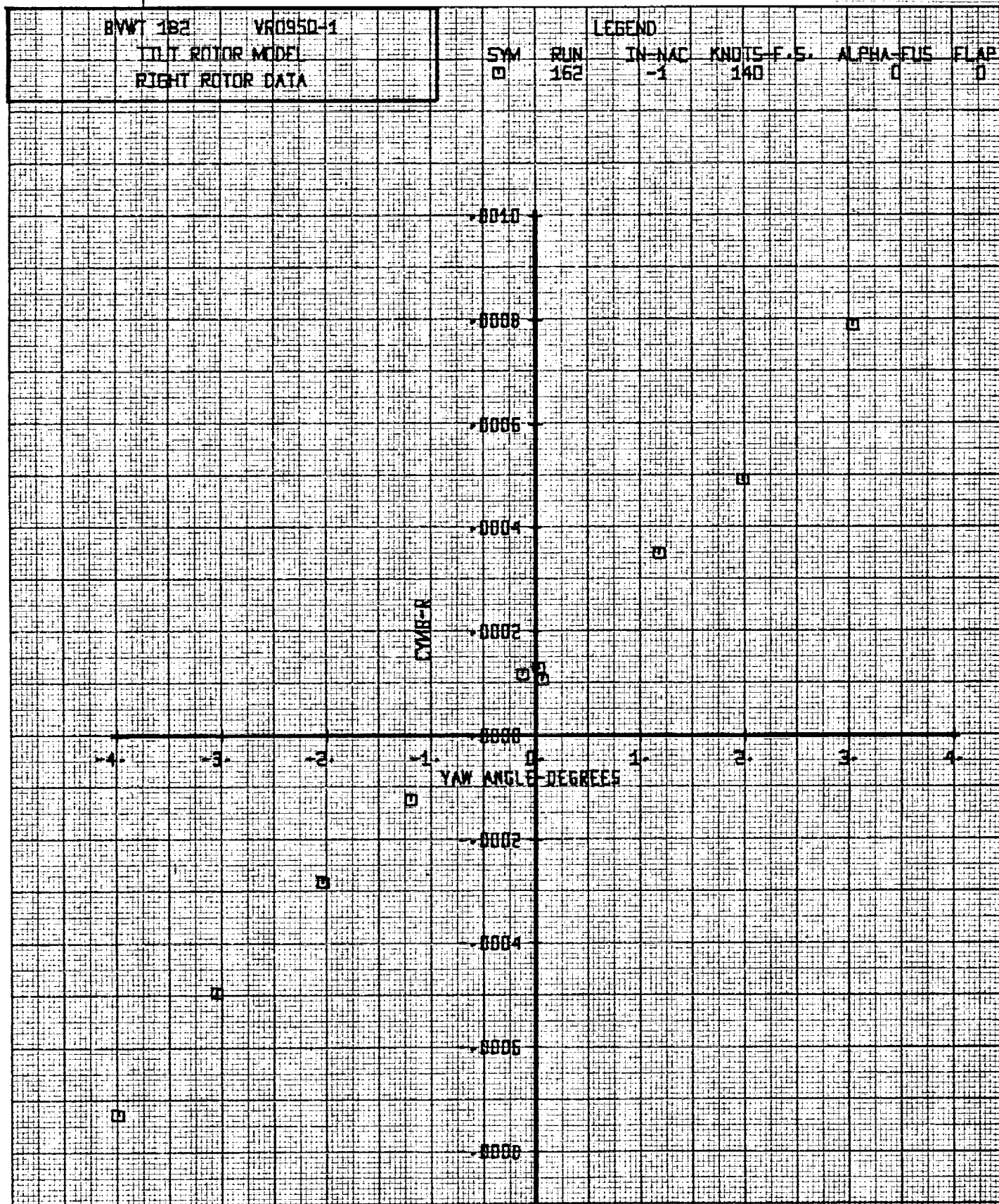


Figure 13-036. Right Rotor Yawing Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

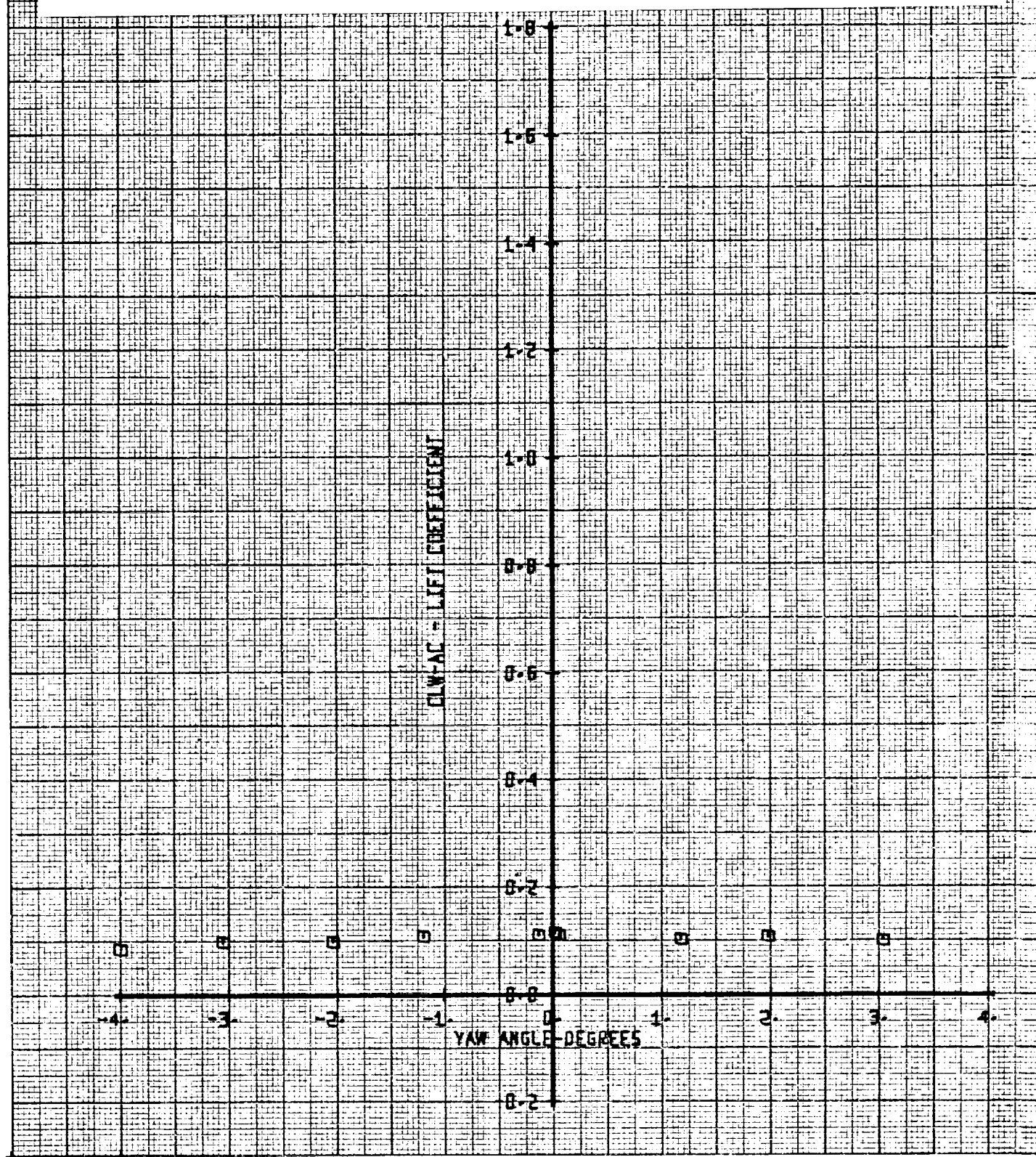
BVWT 182 VR0950-1

TILT ROTOR MODEL

LEGEND

SYM
□RUN
182IN-HAC
-1KNOTS-F.F.S.
140ALPHA-FUS
0FLAP
0

Figure 13-037. Aircraft Lift Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



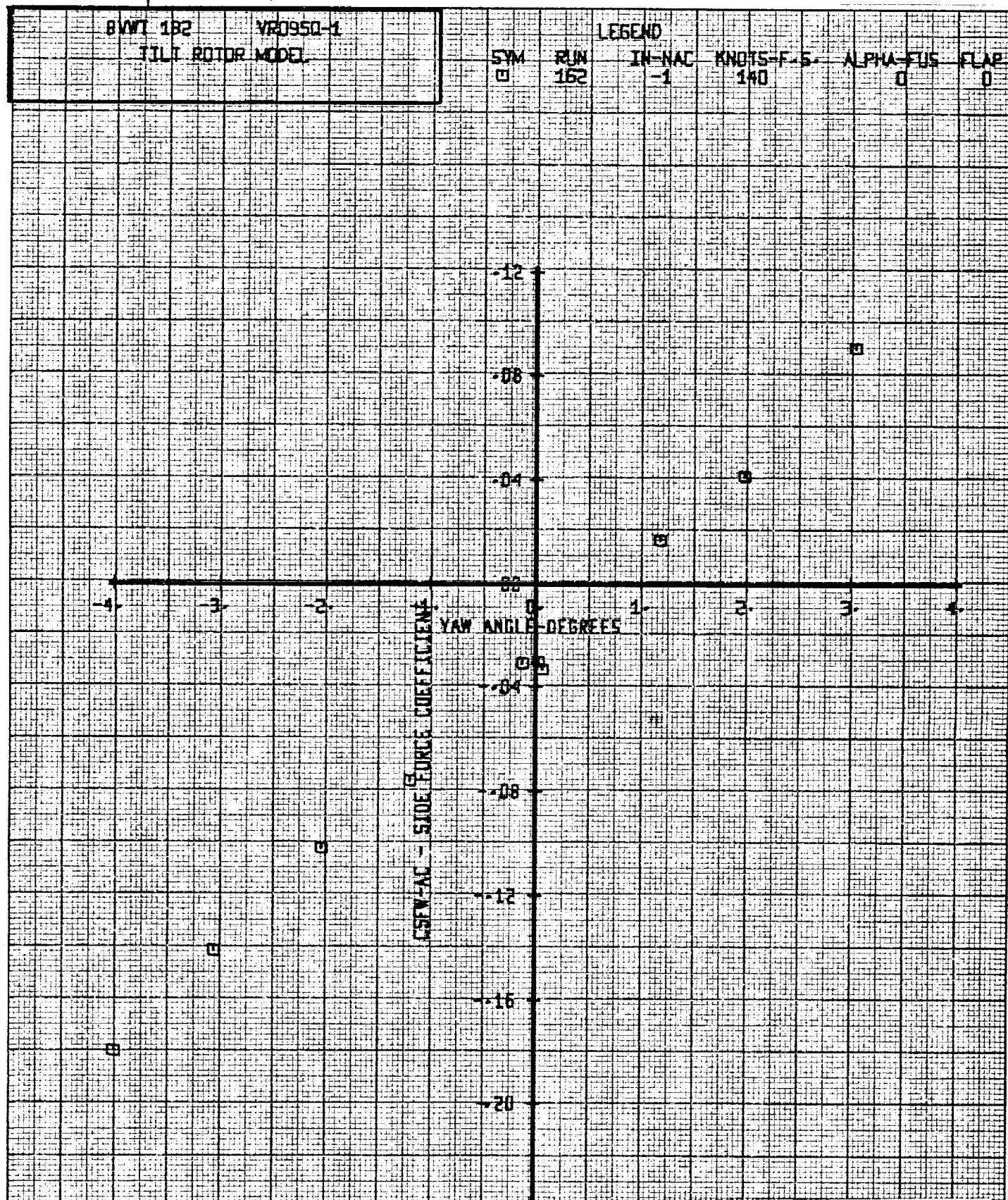


Figure 13-038. Aircraft Side Force Coefficient Versus Yaw ~ Angle Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

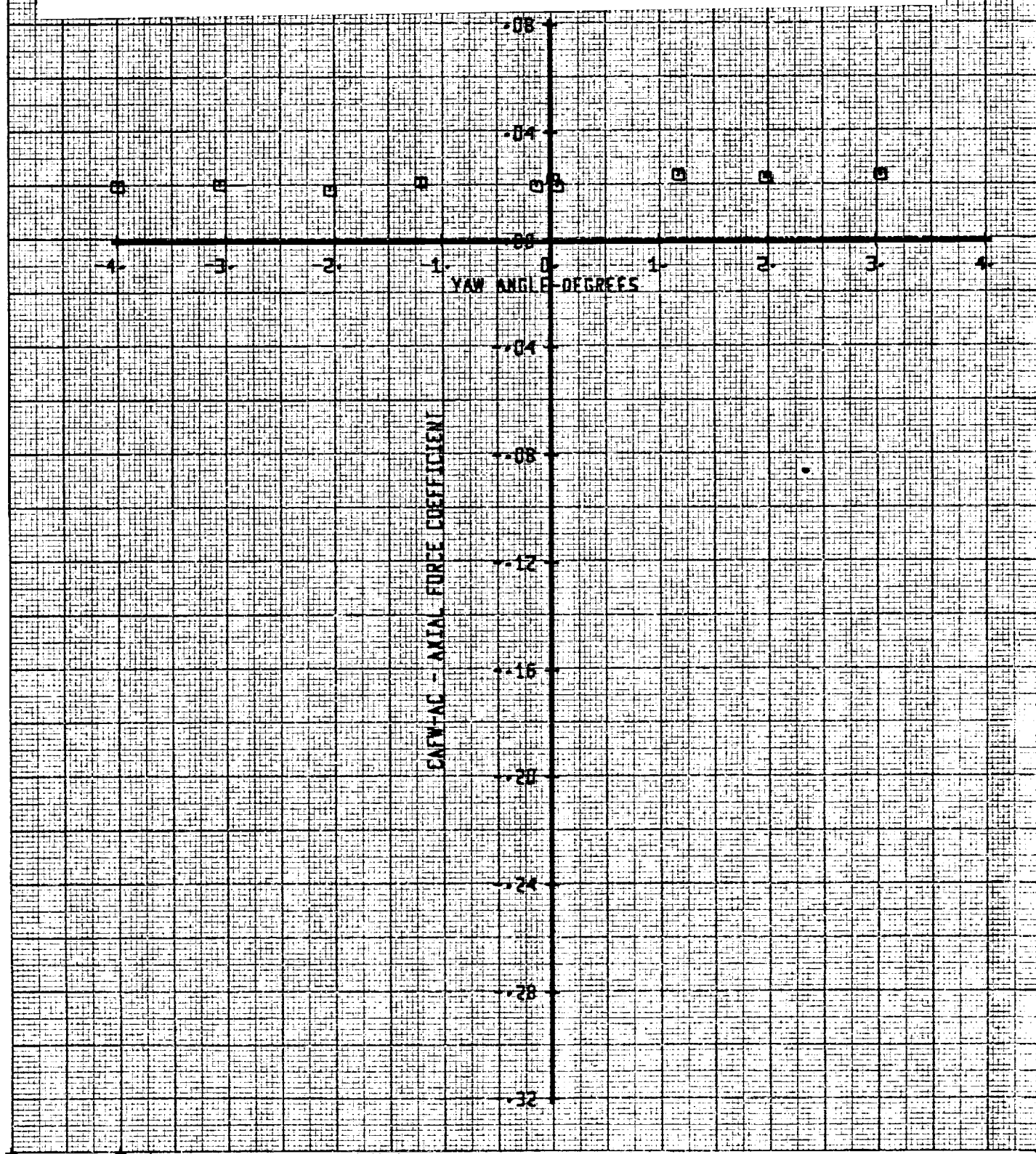
BWWT 182
 TILT ROTOR MODEL

VR0950-1

LEGEND

SYM
□RUN
162IN-HAC
-1KNOTS-F-5
140ALPHA-FUS
0FLAP
0

Figure 13-039. Aircraft Axial Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



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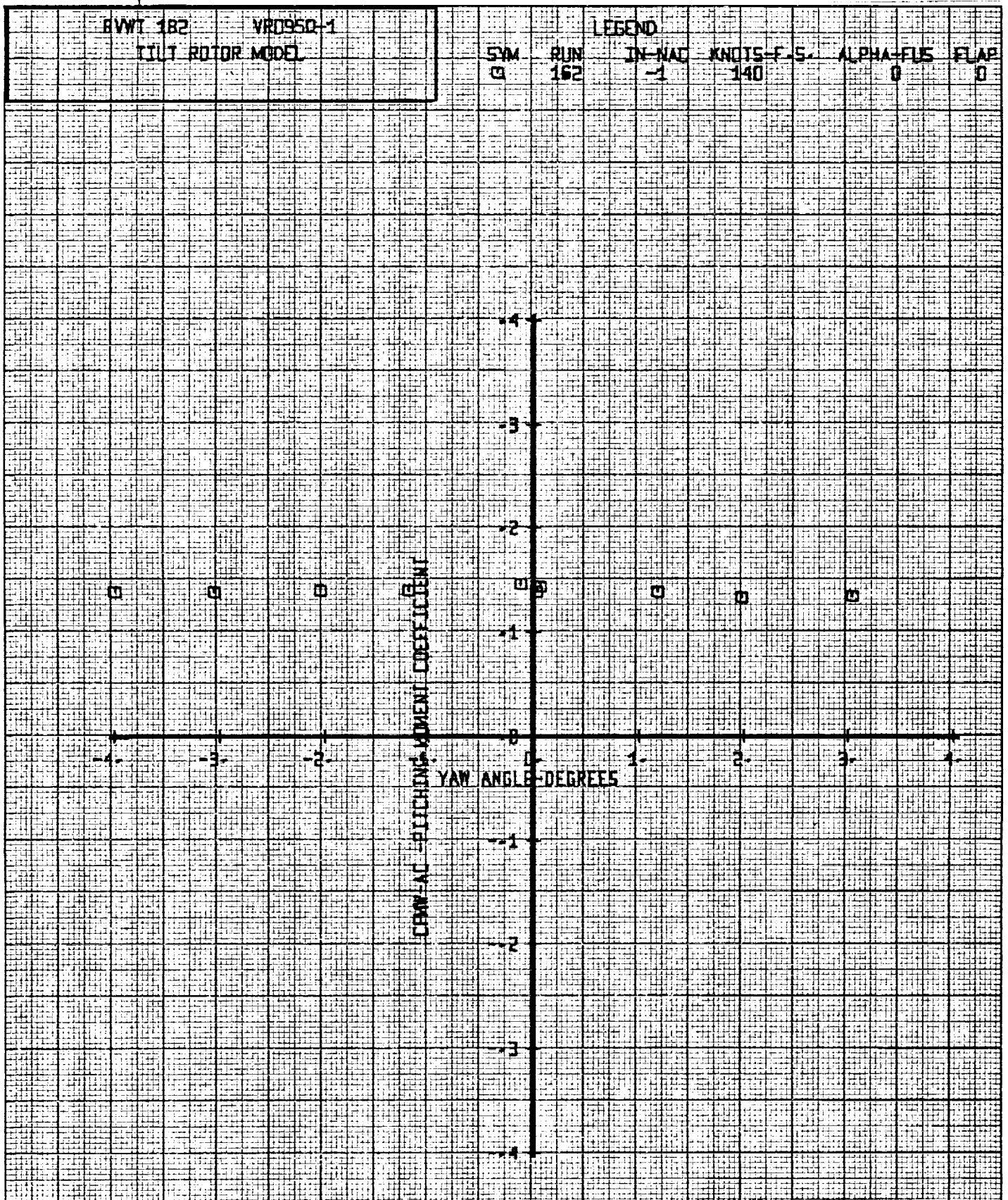


Figure 13-040. Aircraft Pitching Moment Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

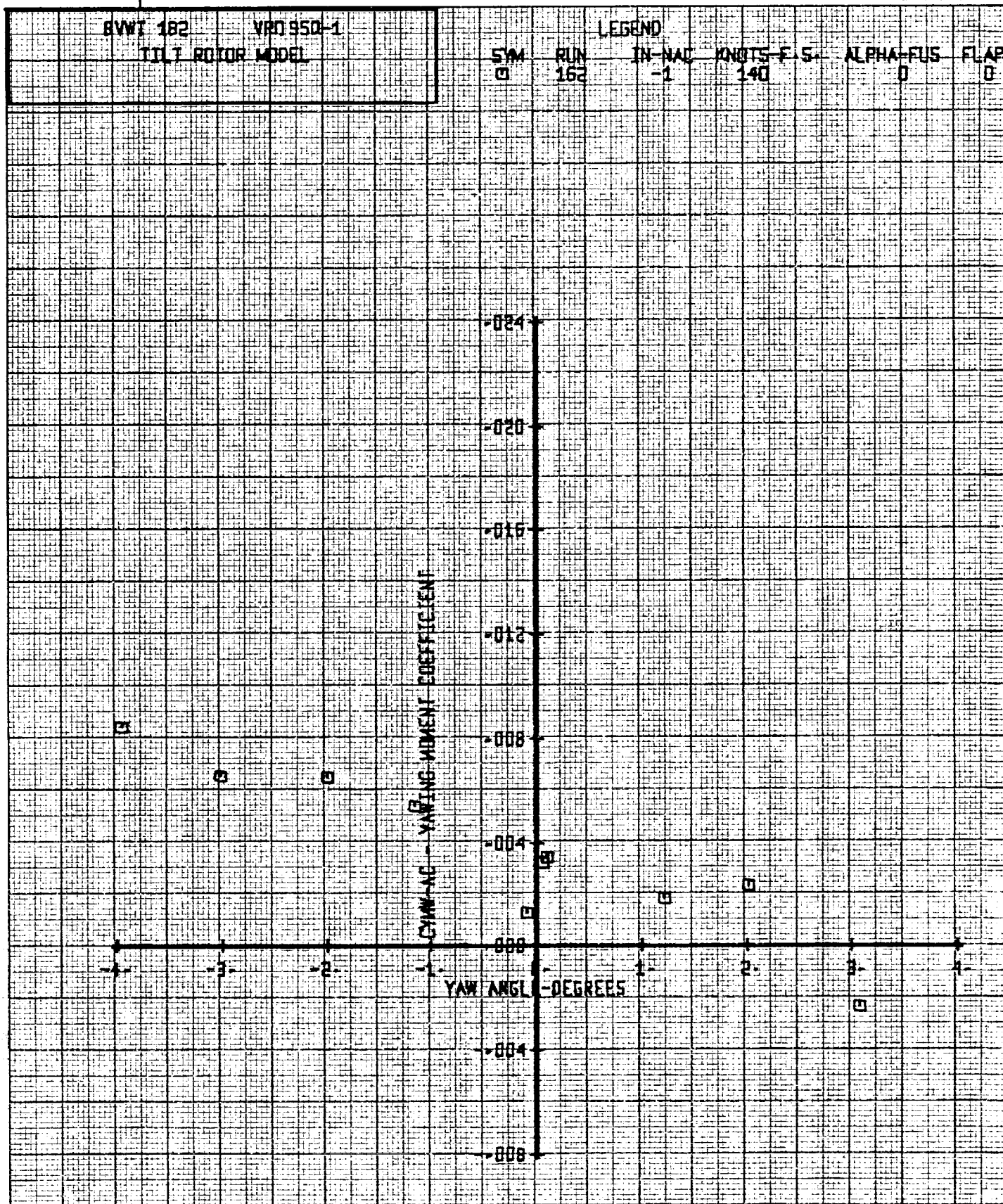


Figure 13-041. Aircraft Yawing Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

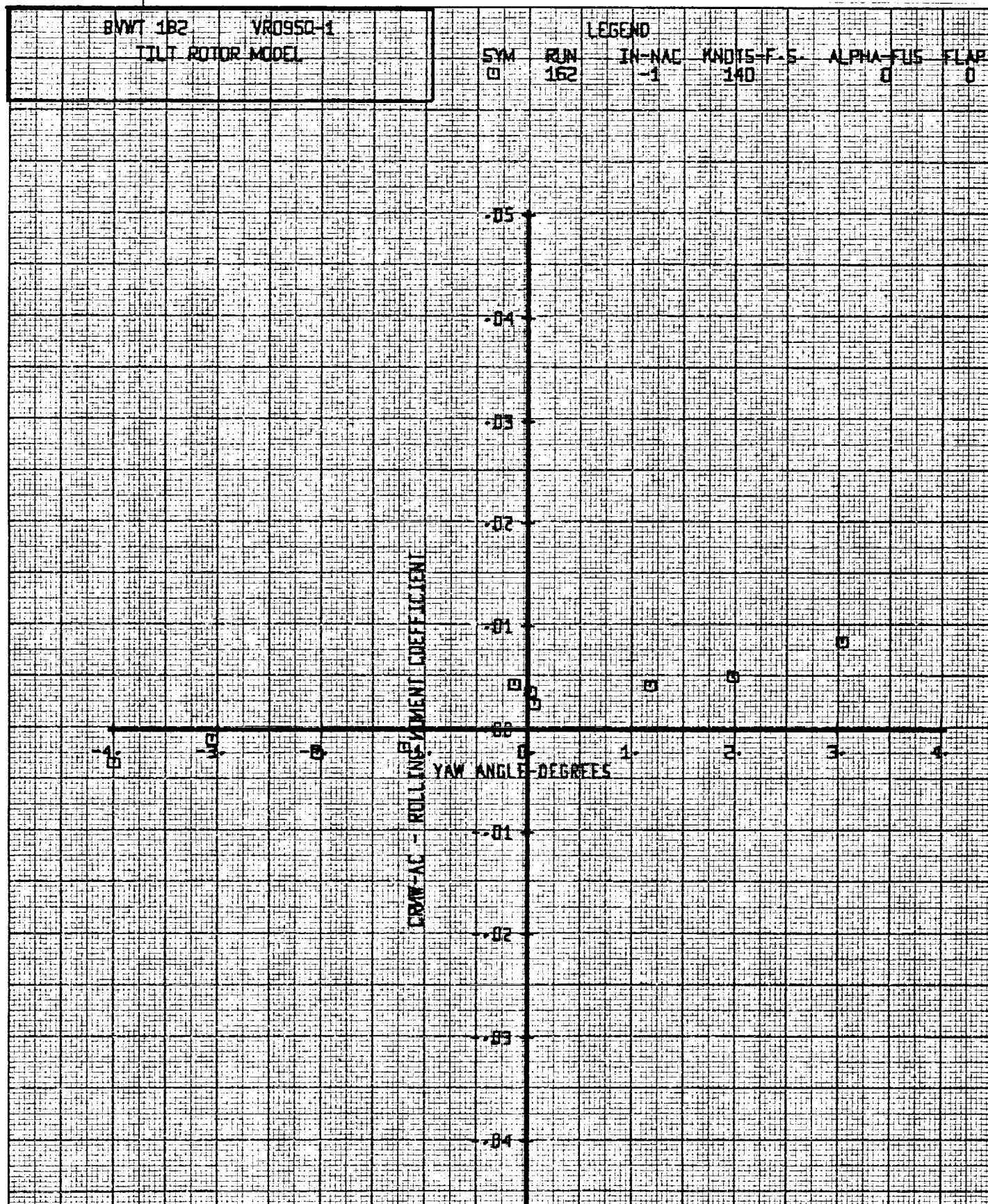
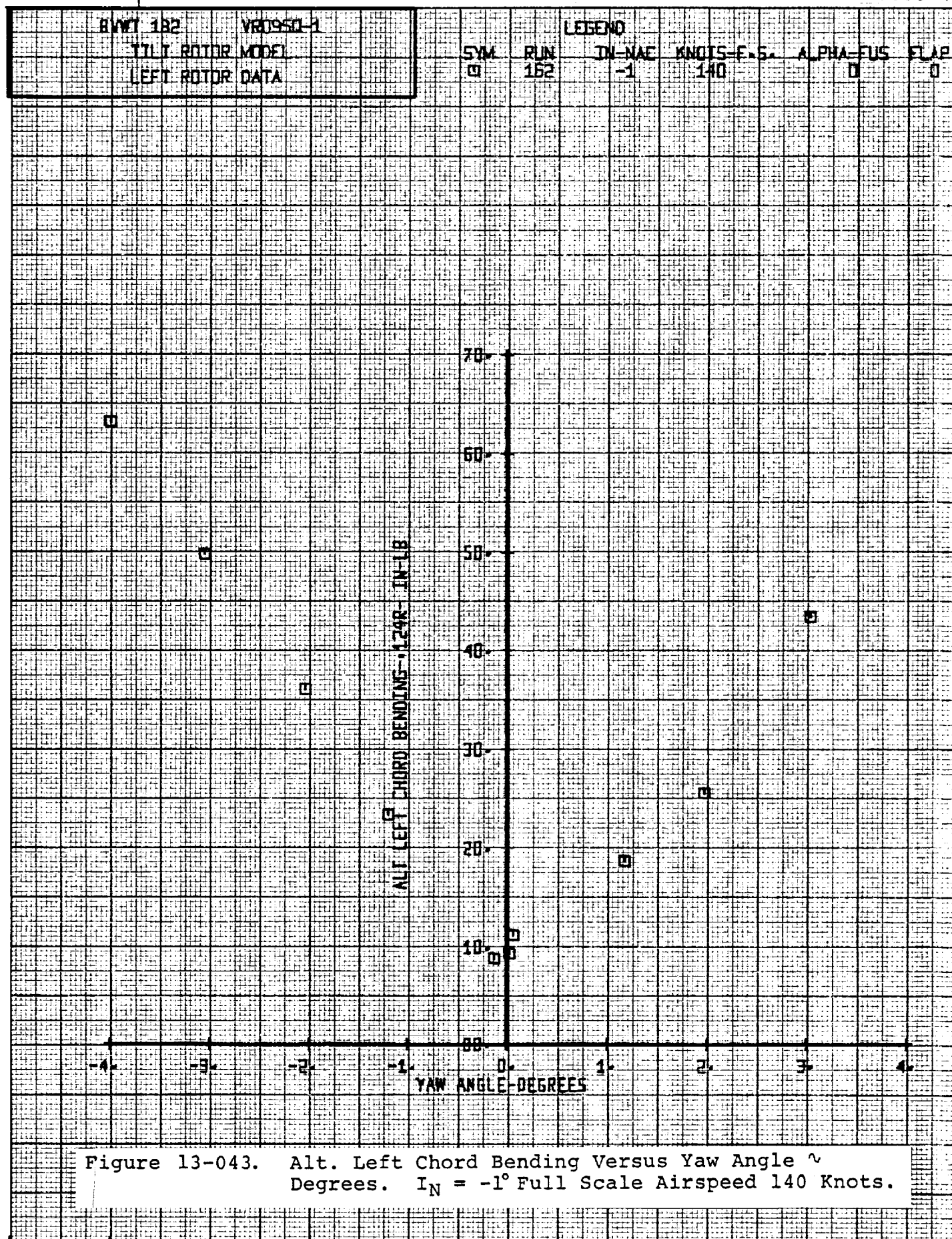


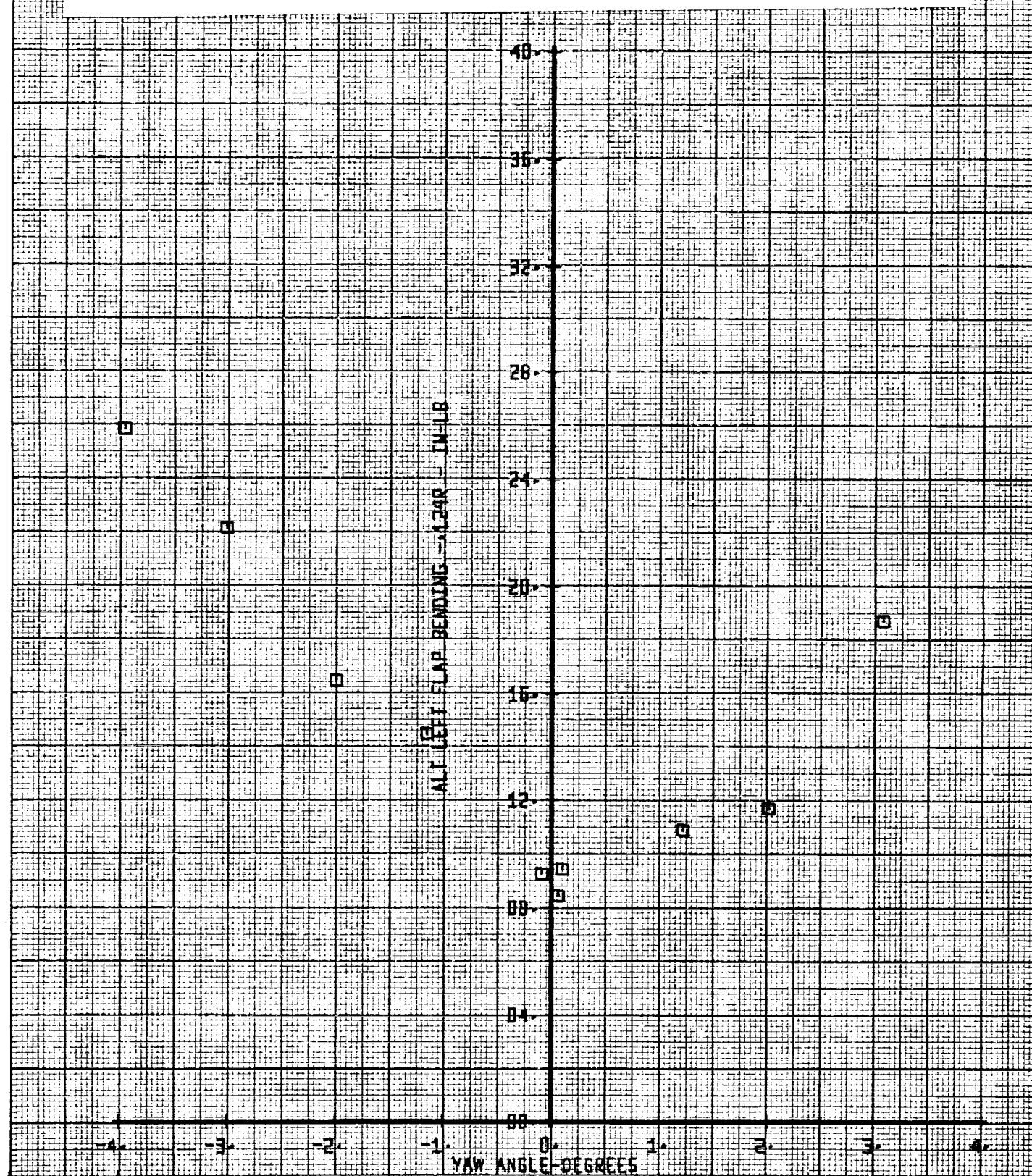
Figure 13-042. Aircraft Rolling Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



BVWT 182 YR0950-1
TILT ROTOR MODEL
LEFT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 152 -1 140 0 0

Figure 13-044. Alt. Left Flap Bending Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



BVWT 182 VRO950-1

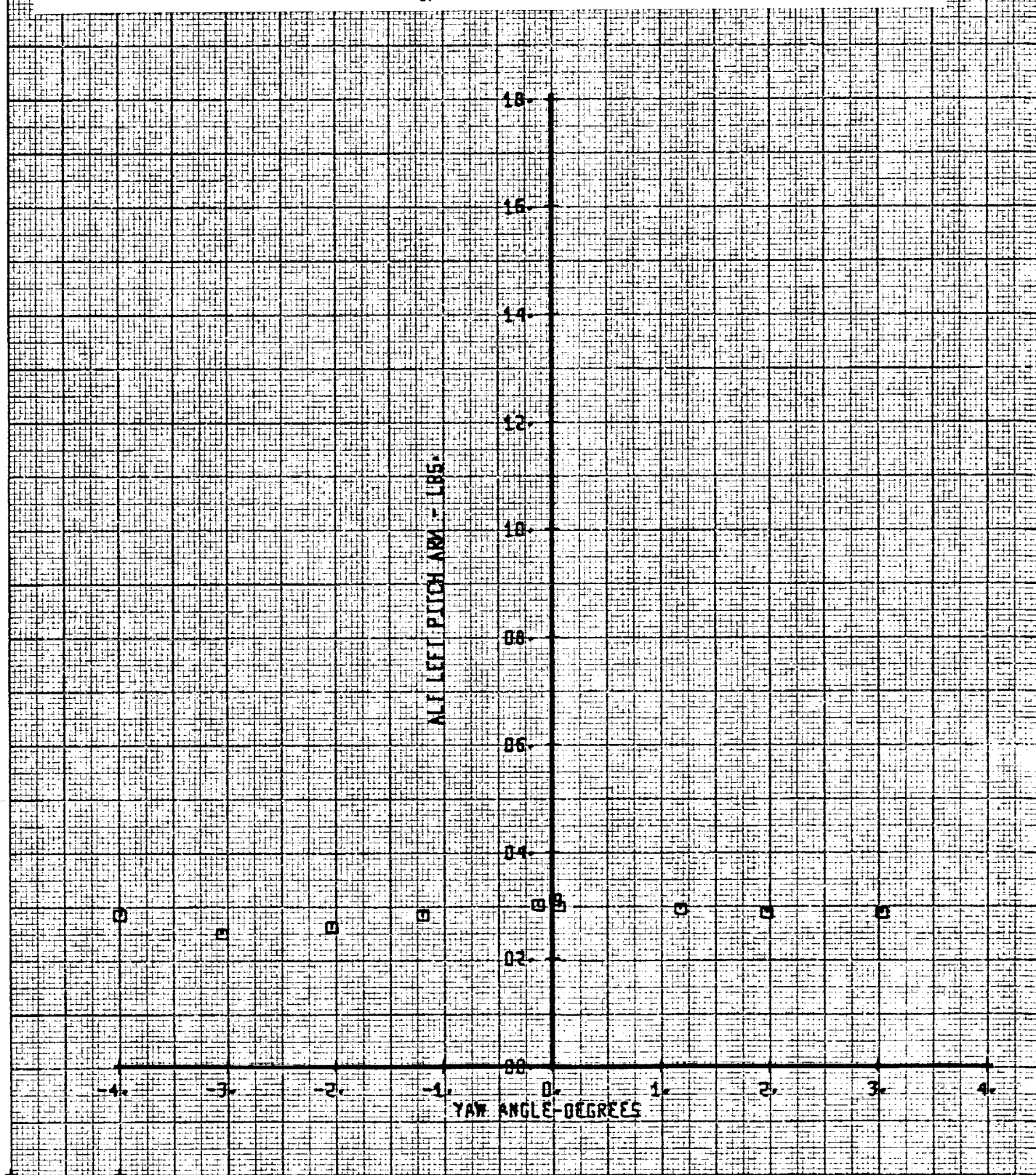
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM
0RUN
162IN-NAC
-1KNOTS-F.S.
140ALPHA-FUS
0FLAP
0

Figure 13-045. Alt. Left Pitch Link Load Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



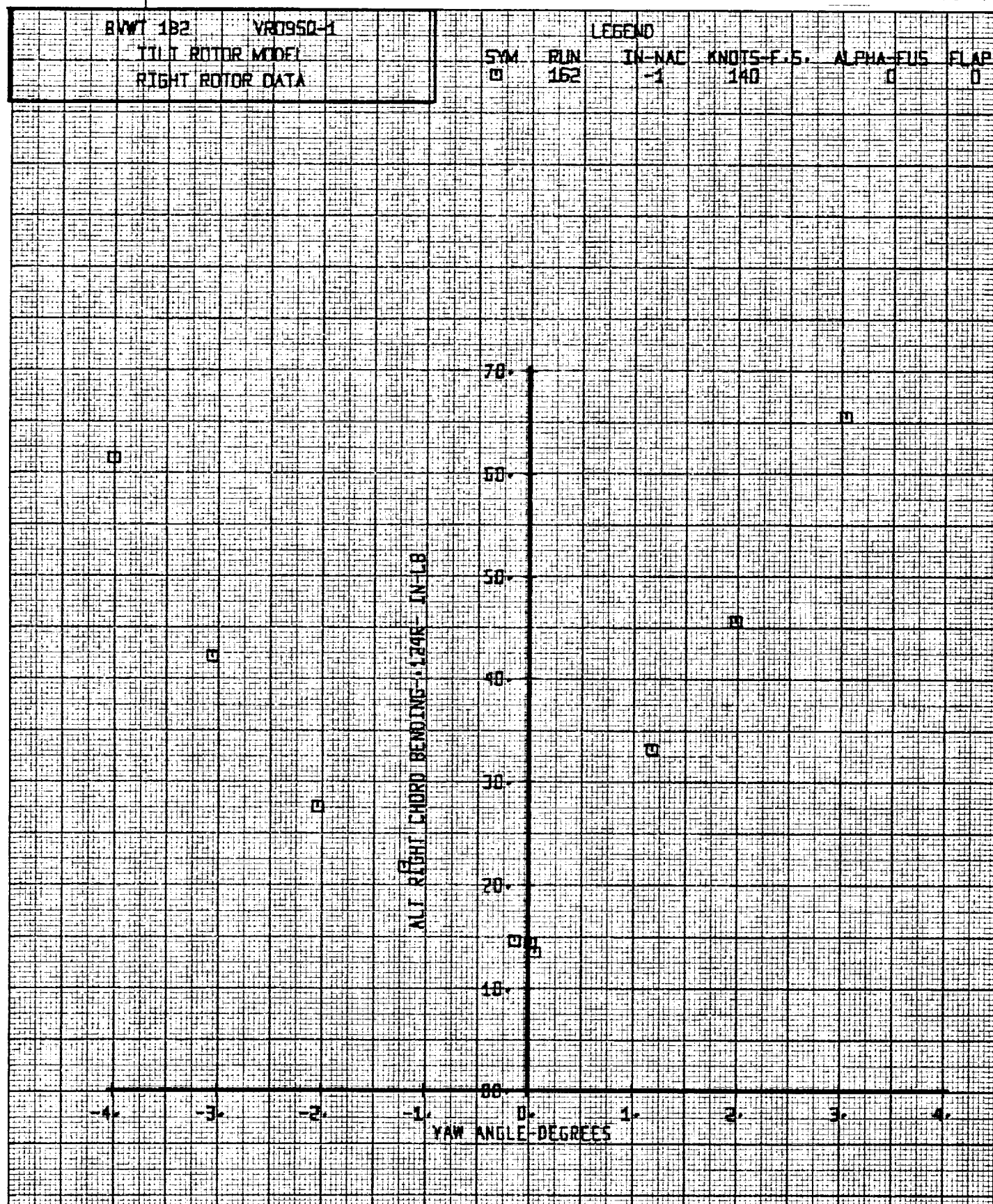
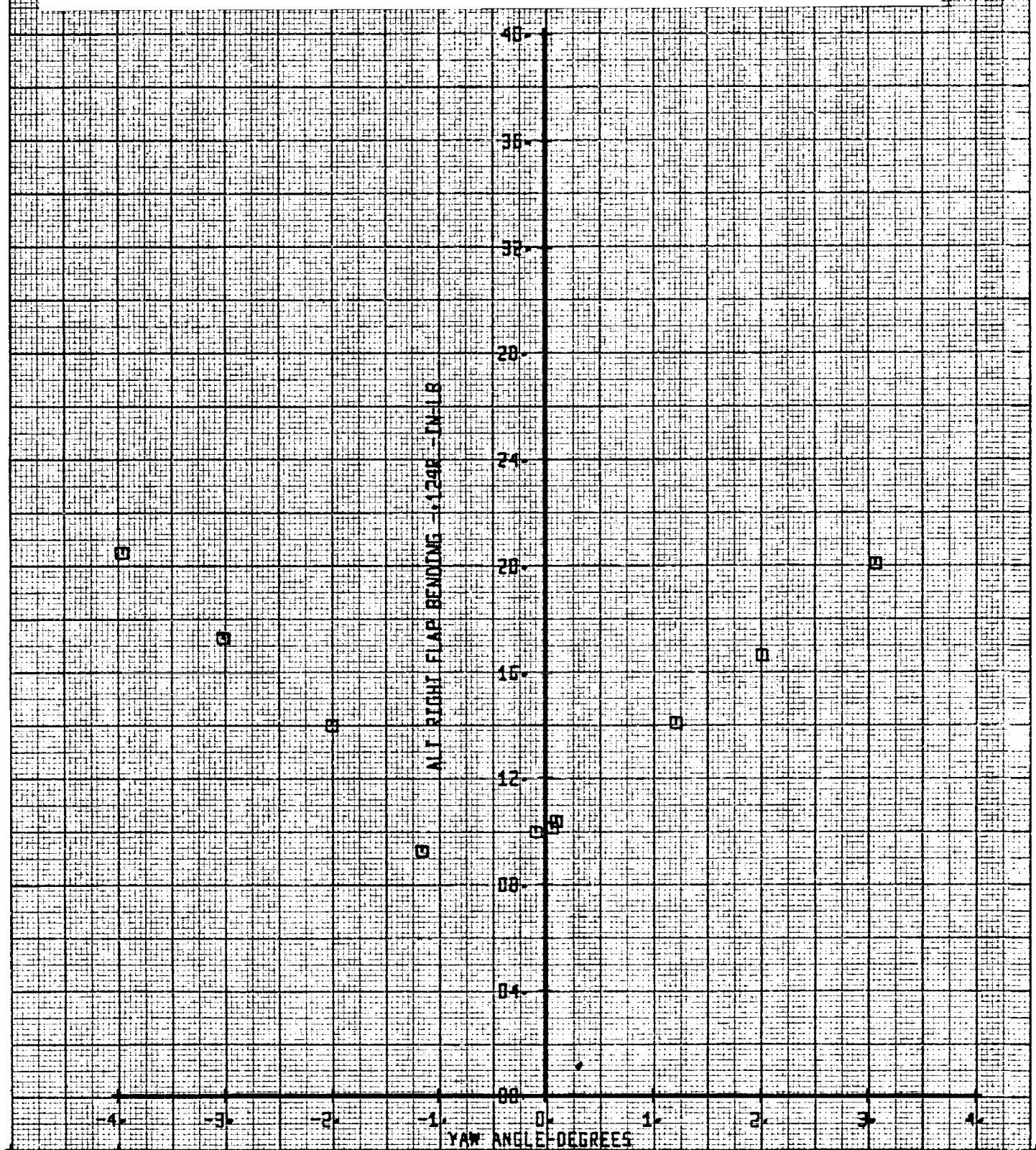


Figure 13-046. Alt. Right Chord Bending Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

BLWT 182	YR0950-1	LEGEND				
TILT ROTOR MODEL		SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS
RIGHT ROTOR DATA		□	162	-1	140	0
						FLAP 0

Figure 13-047. Alt. Right Flap Bending Versus Yaw Angle α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



BVWT 1B2 VR0950-1

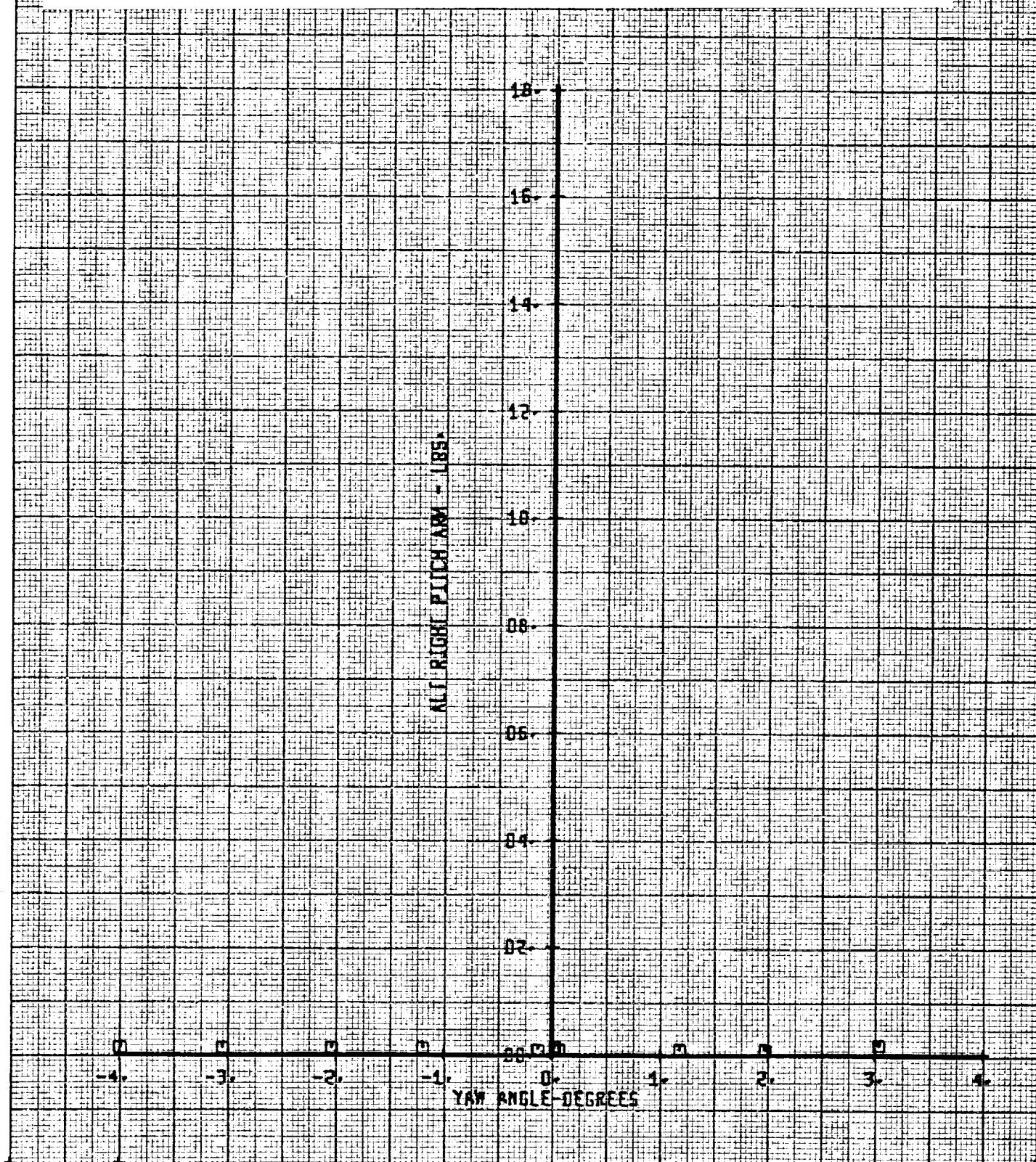
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-DEG	FLAP
□	162	-1	140	0	0

Figure 13-048. Alt. Right Pitch Link Load Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



BWT 1B2 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

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IN-NAC

KNOTS-F-5

ALPHA-FUS

FLAF

12

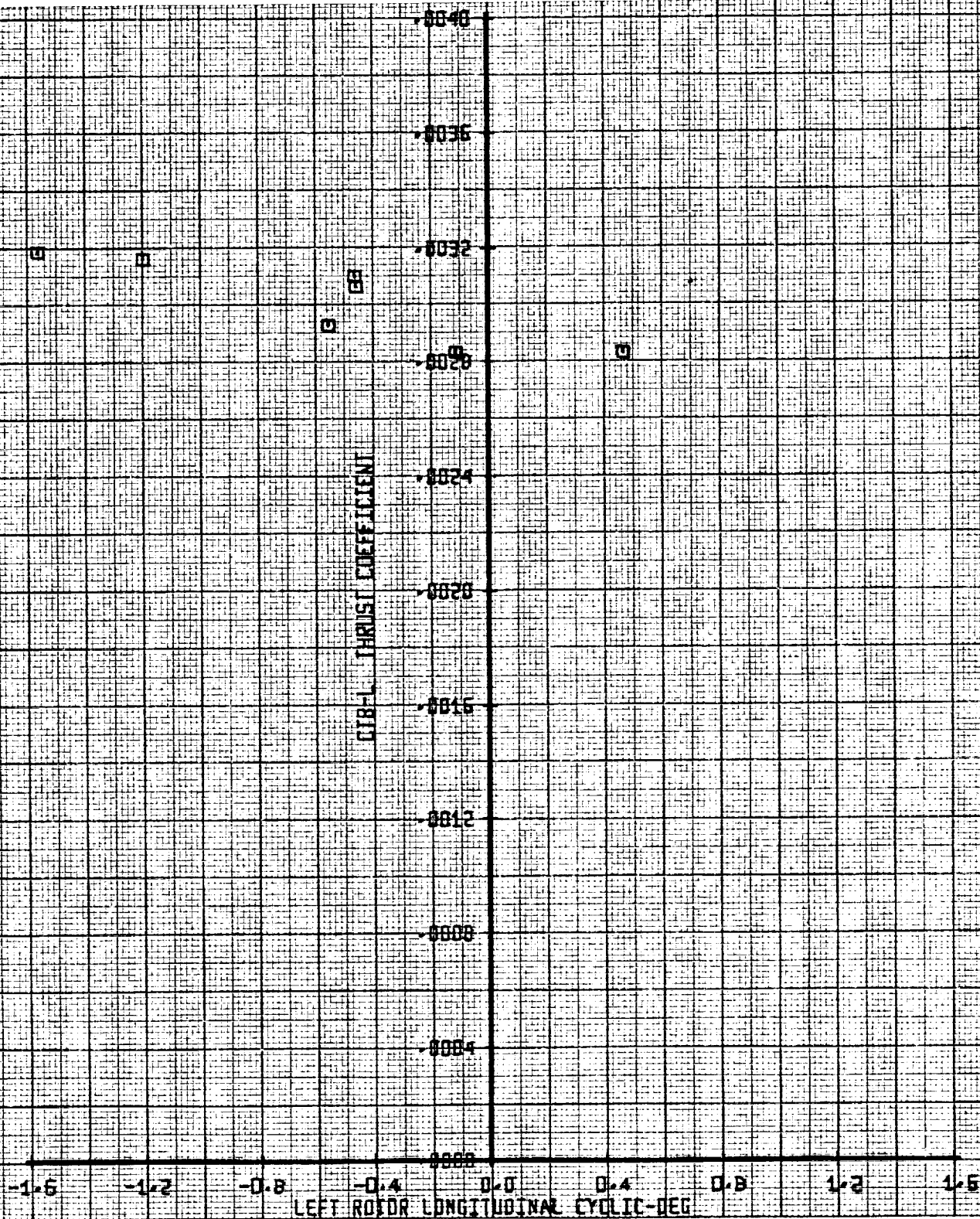
164

140

1

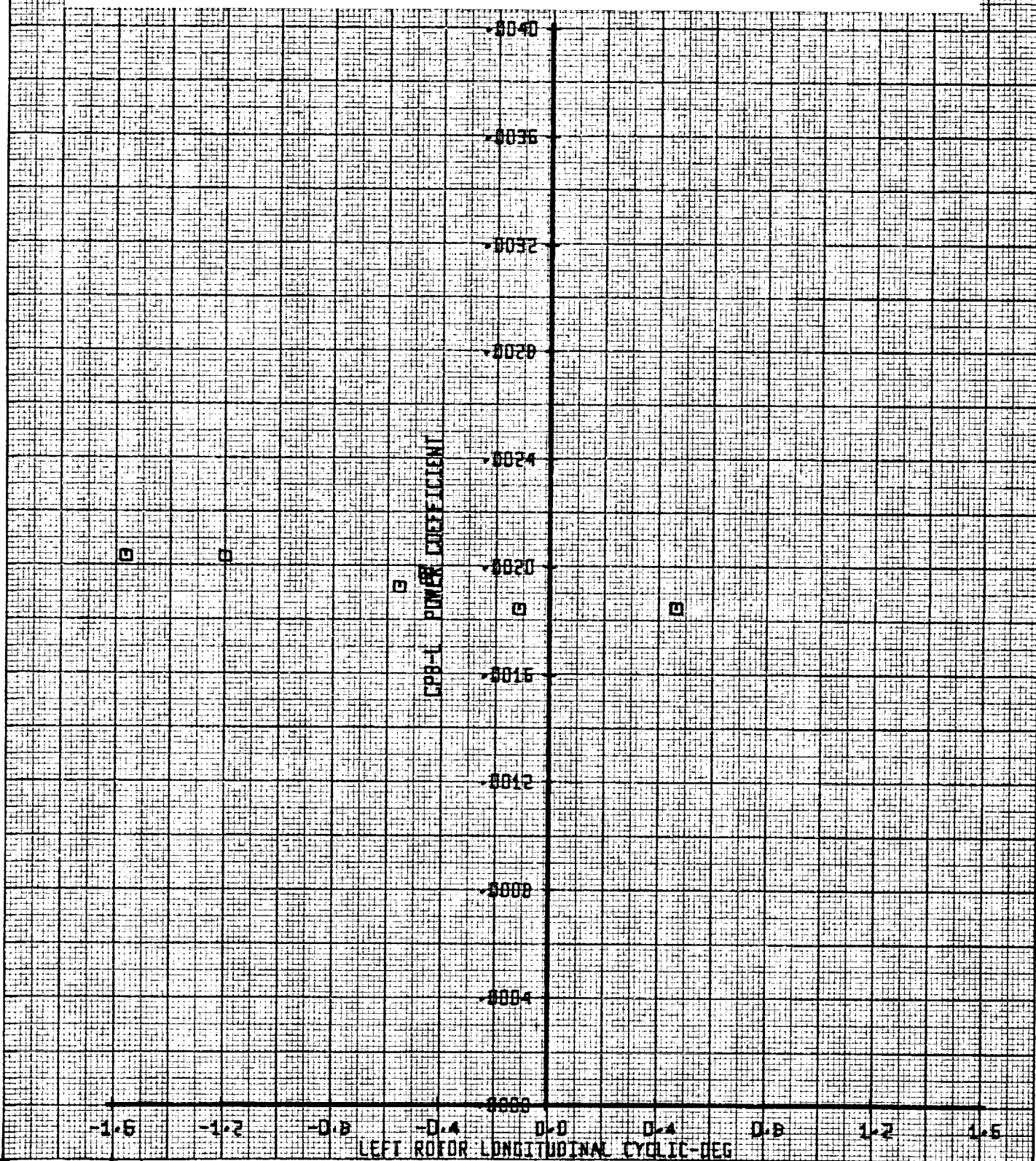
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Figure 13-049. Left Rotor Thrust Coefficient Versus Left Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



BVWT 1B2	VR0950-1	LEGEND				
TILT ROTOR MODEL		SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS
LEFT ROTOR DATA		□	154	-1	140	0
						FLAP
						0

Figure 13-050. Left Rotor Power Coefficient Versus Left Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 140 Knots.



BVWT 1B2 VR095D-1
 T.D.1 ROTOR MODEL
 LEFT ROTOR DATA

LEGEND
 SYM RUN IN-MAC KNOTS-F.S. ALPHA-FUS FLAP
 0 164 -1 140 0 0

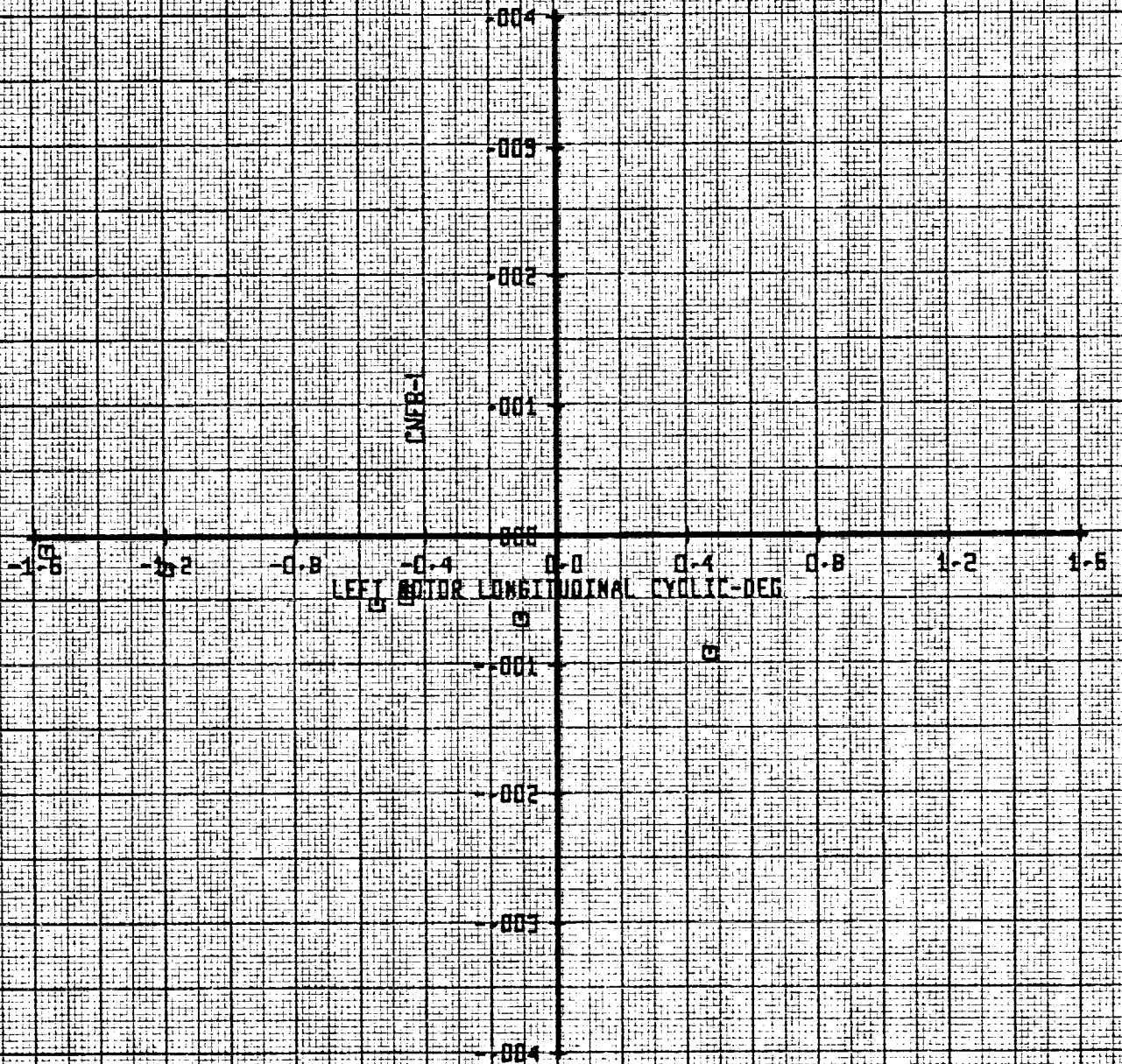


Figure 13-05L Left Rotor Normal Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

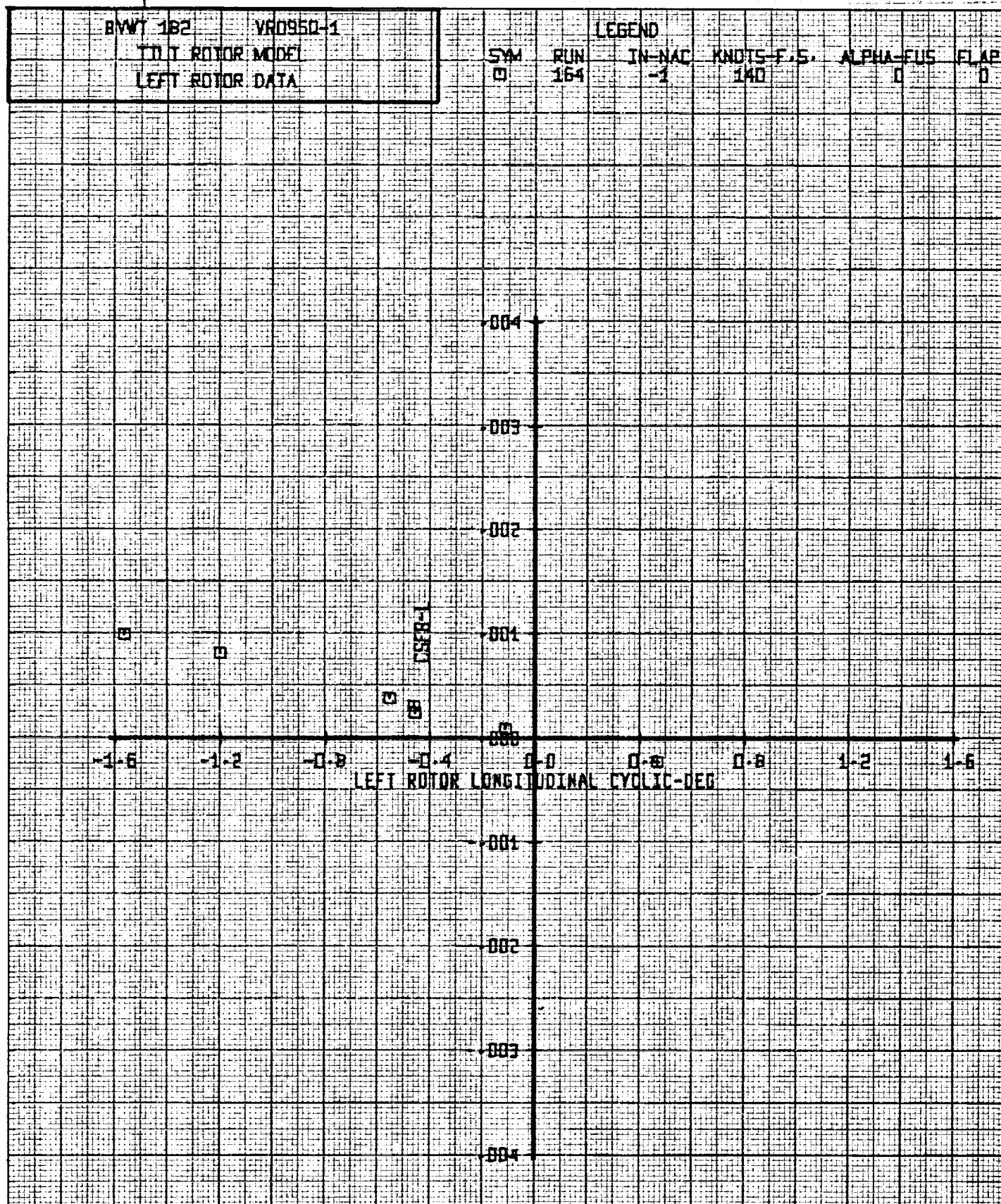


Figure 13-052. Left Rotor Side Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

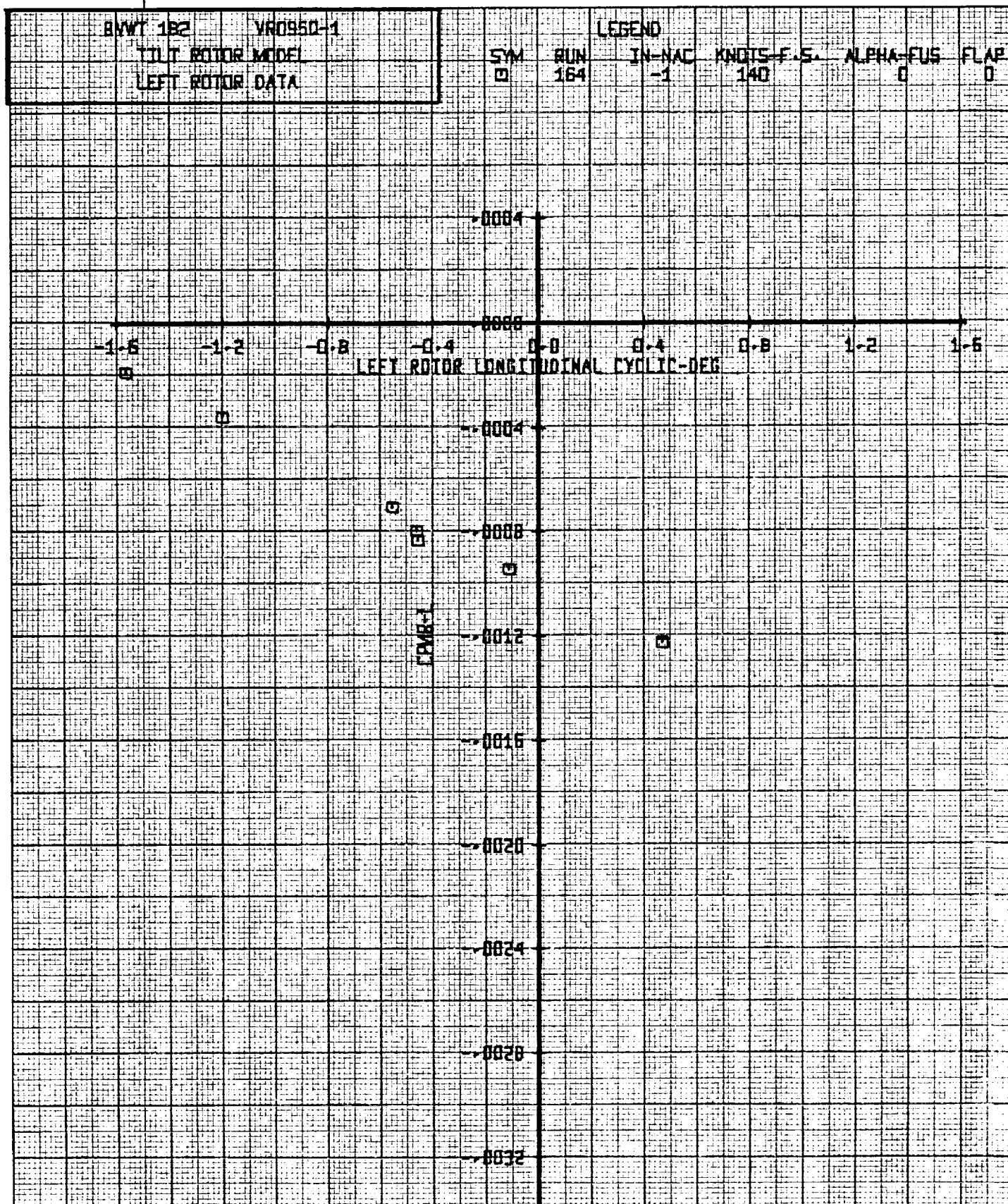
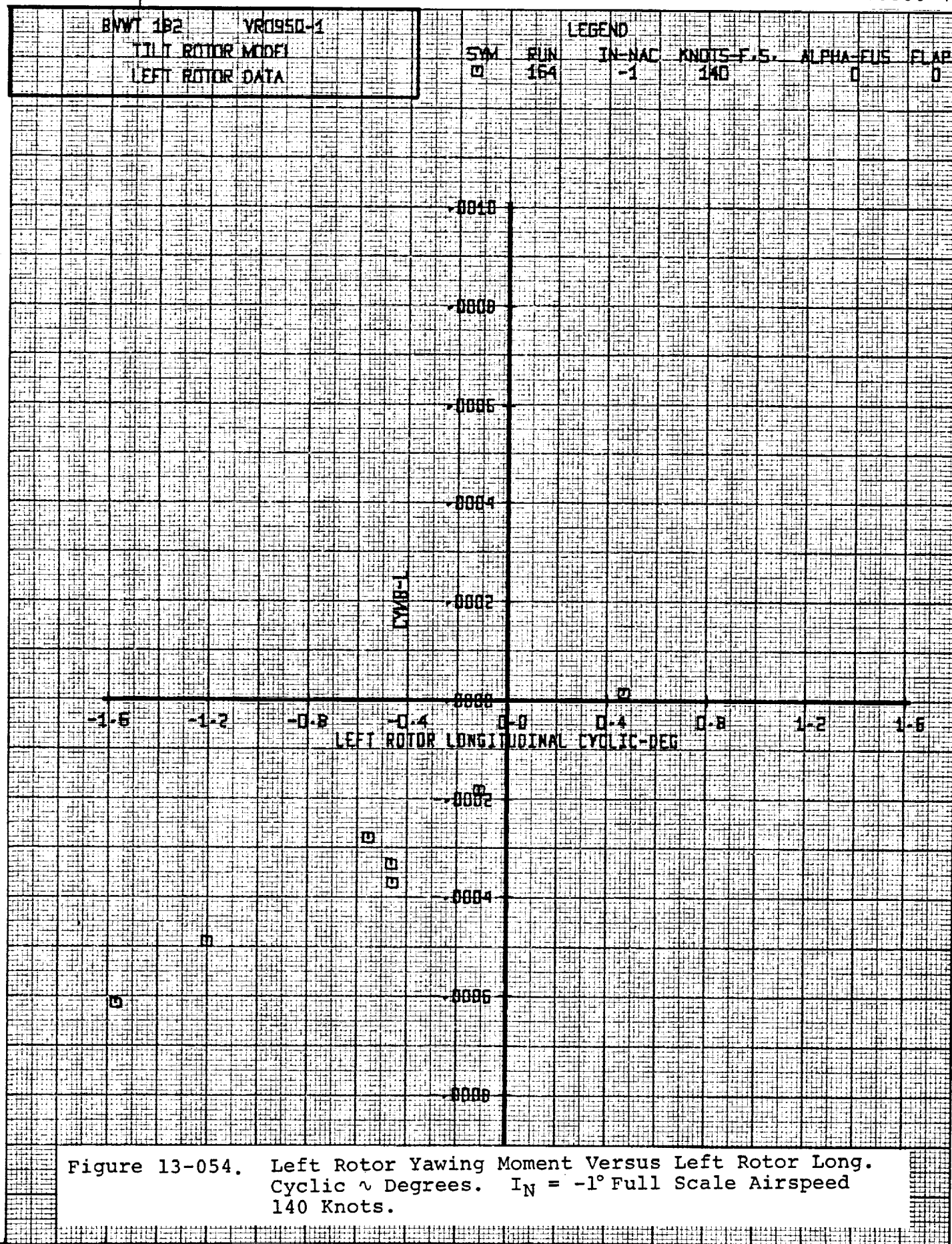
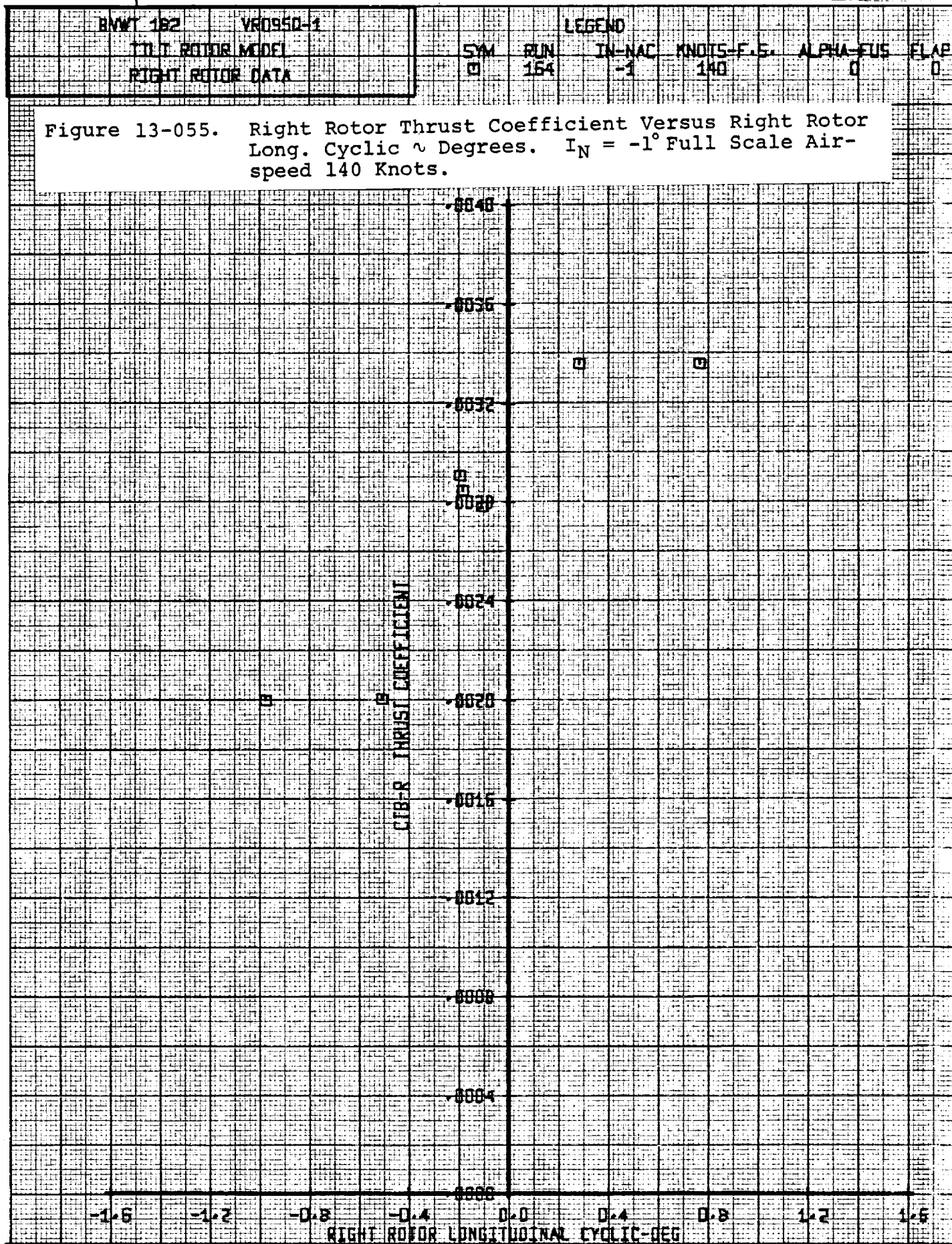


Figure 13-053. Left Rotor Pitching Moment Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.





BWV	1B2	VR0950-1
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TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

54M

WIN

IN-A-C

KNOTS-F-5

ALPHA-515

FLAP



154

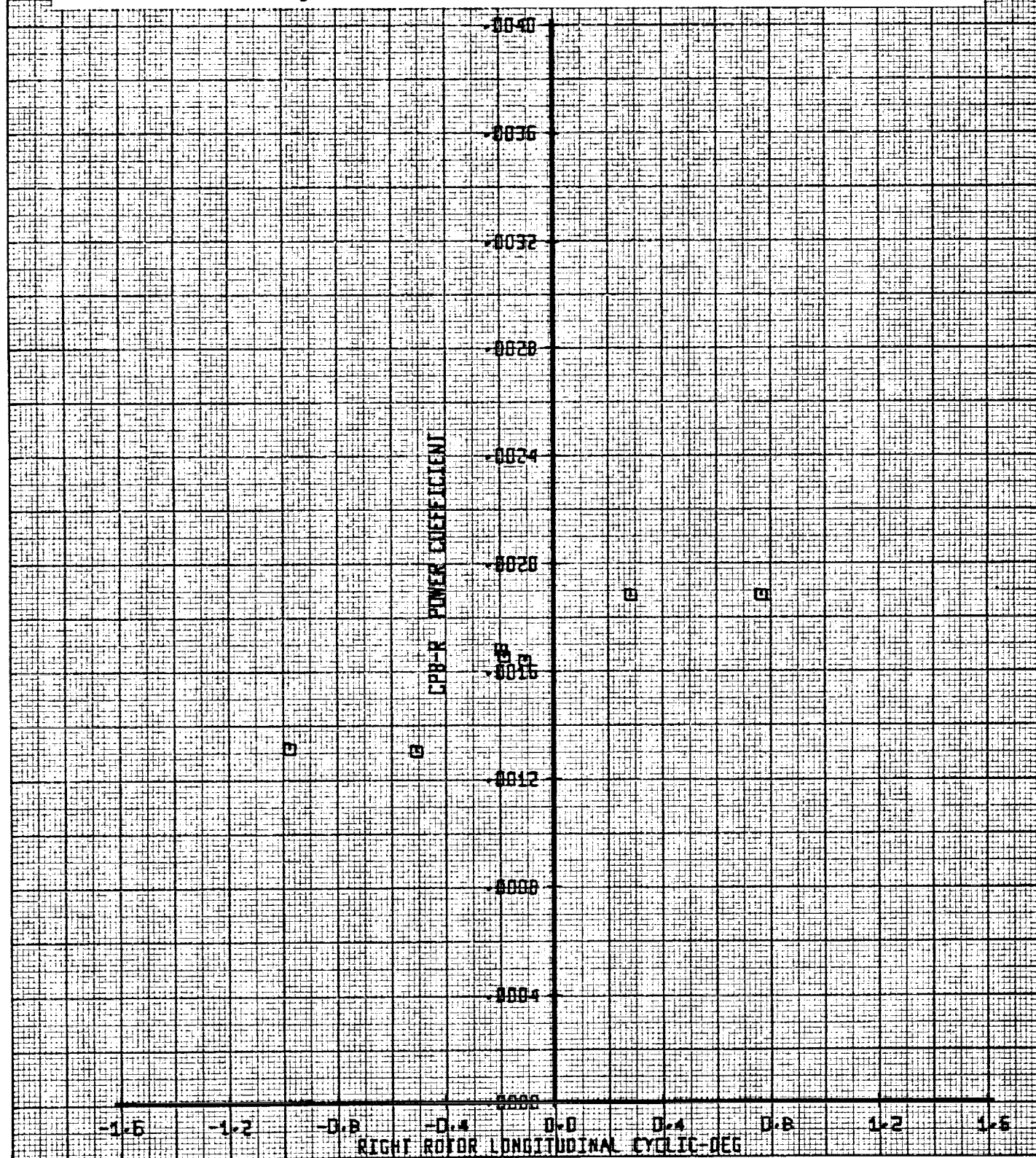
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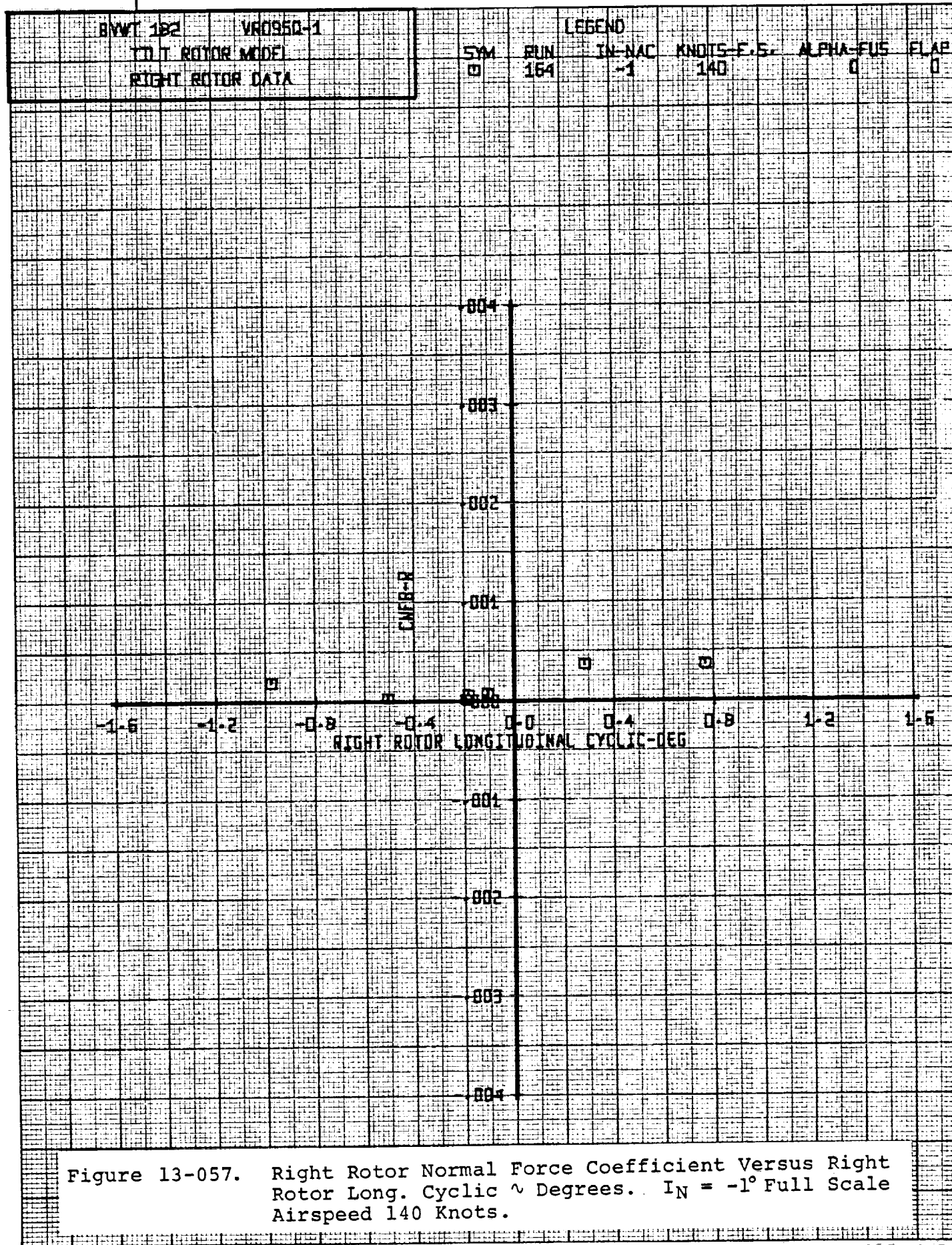
140

1

Figure 1

Figure 13-056. Right Rotor Power Coefficient Versus Right Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.





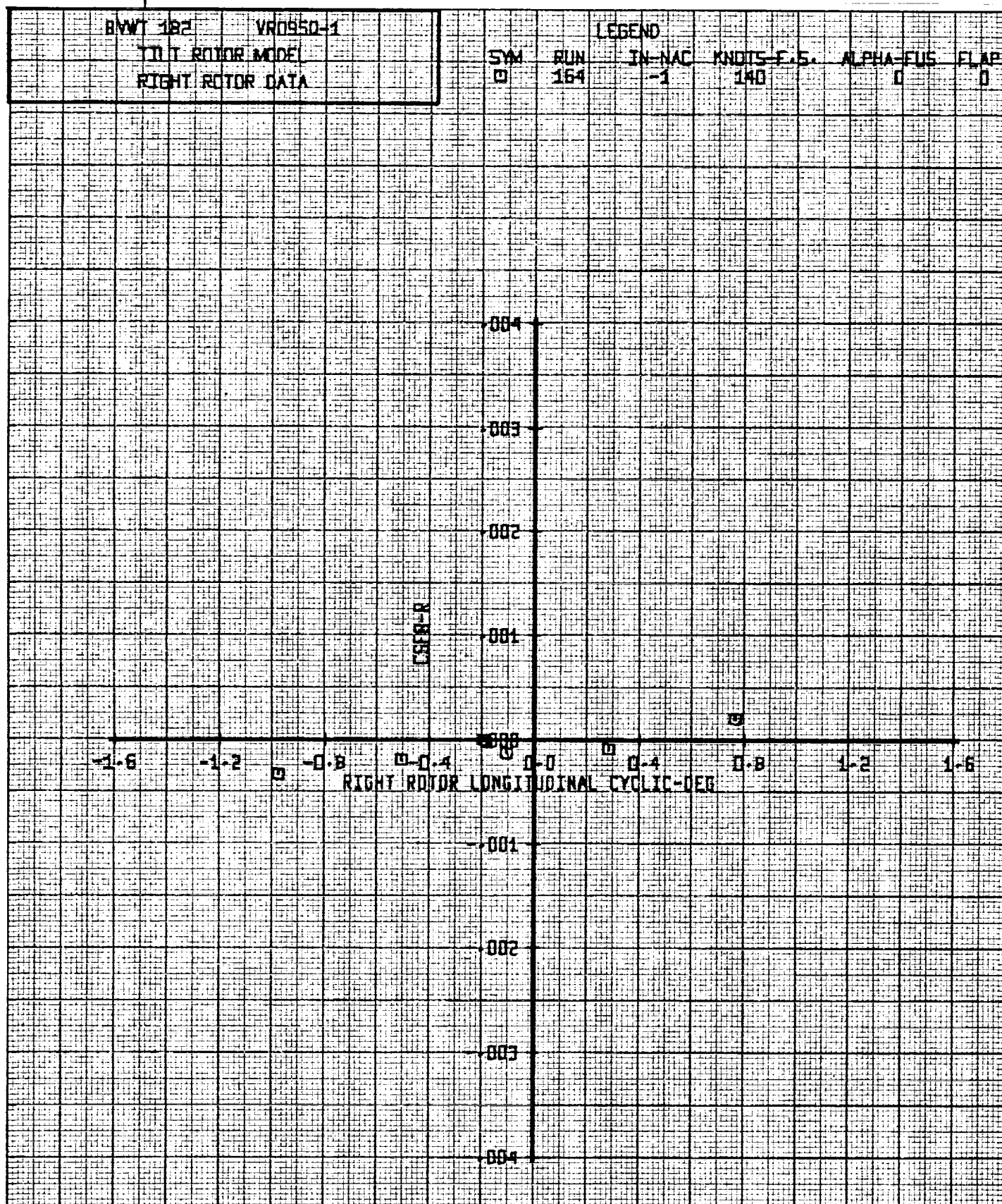


Figure 13-058. Right Rotor Side Force Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

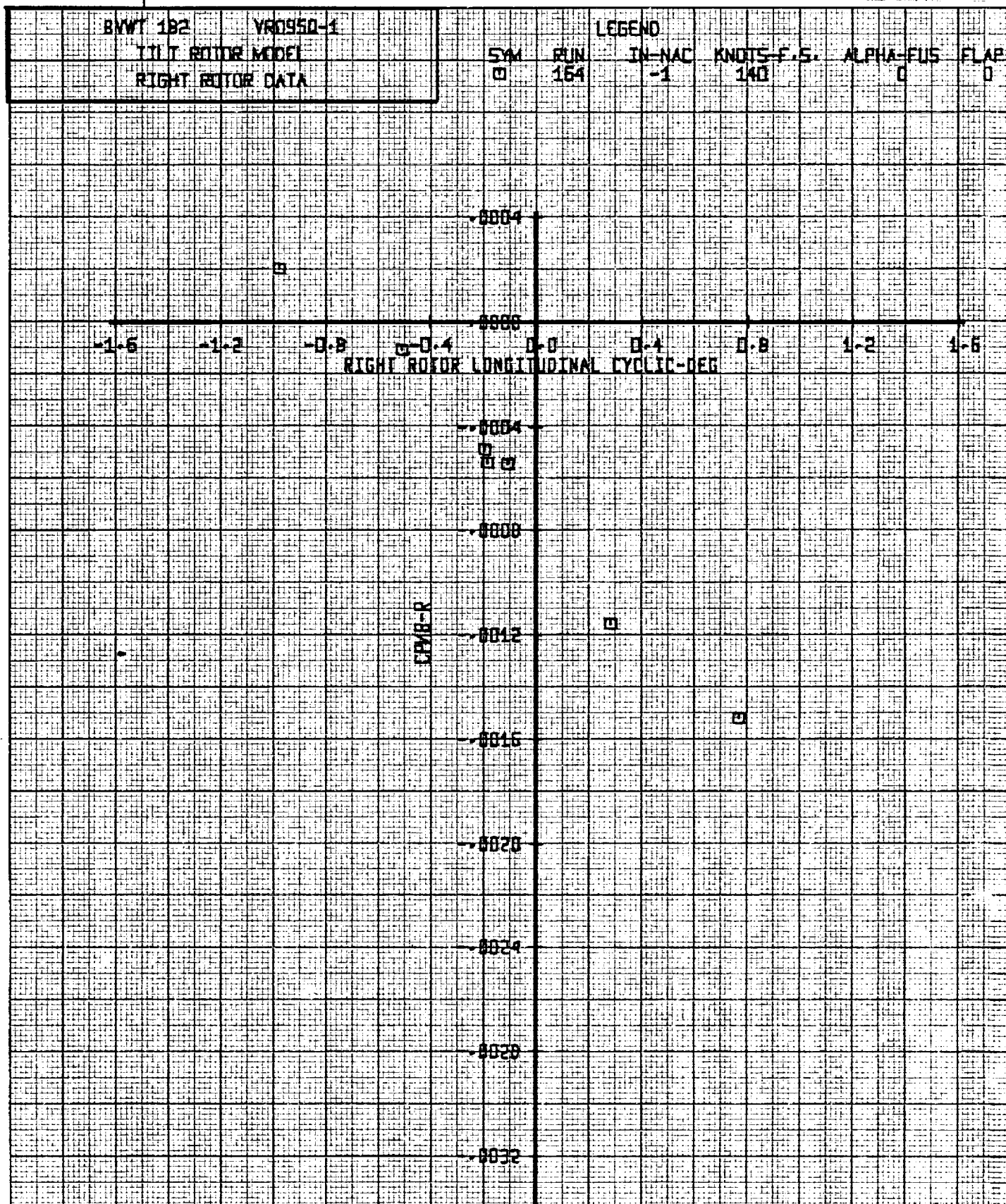


Figure 13-059. Right Rotor Pitching Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

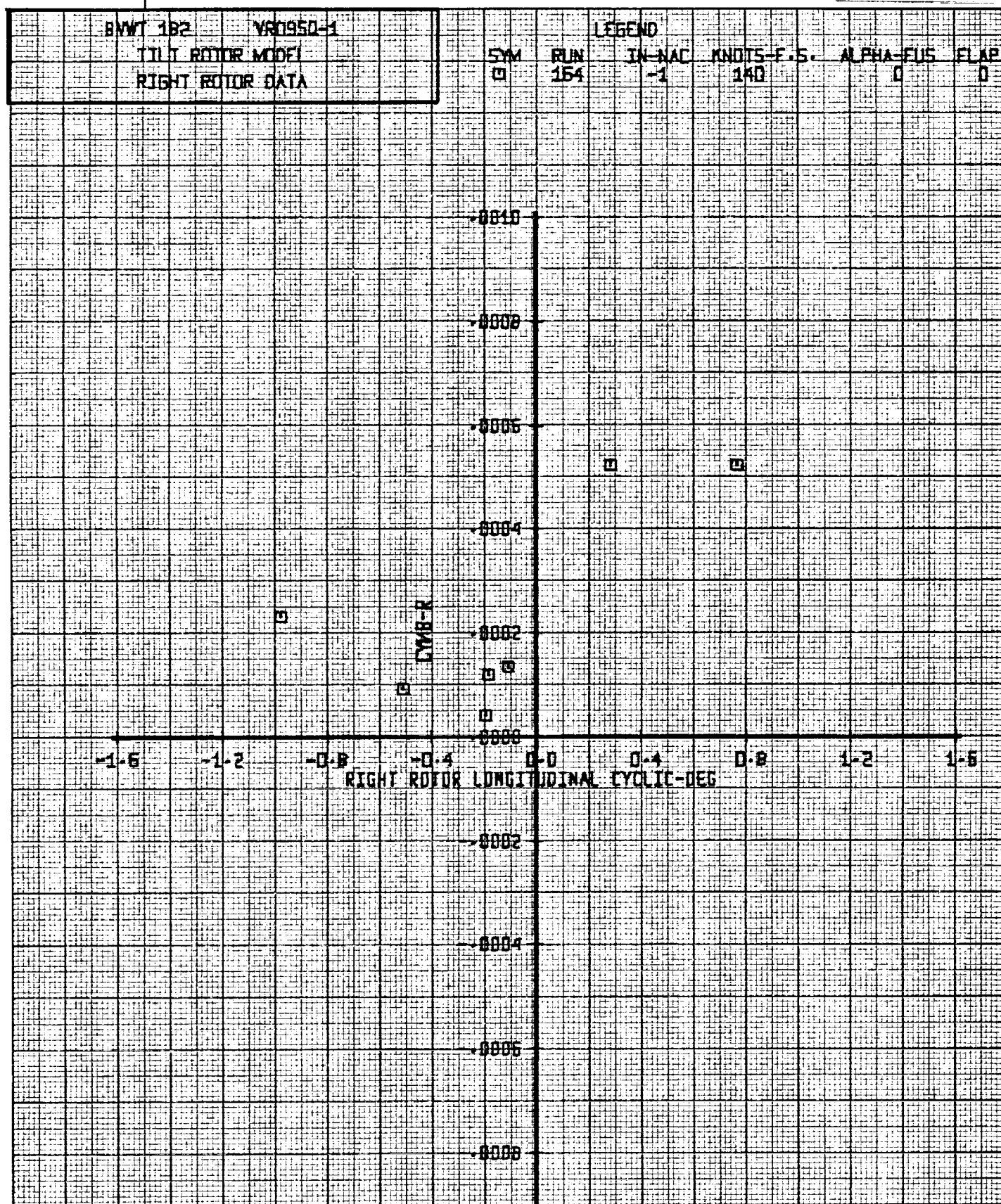


Figure 13-060. Right Rotor Yawing Moment Versus Right Rotor Long. cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

BVWT 182

VR0950-1

1113 ROTOR MODEL

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

154

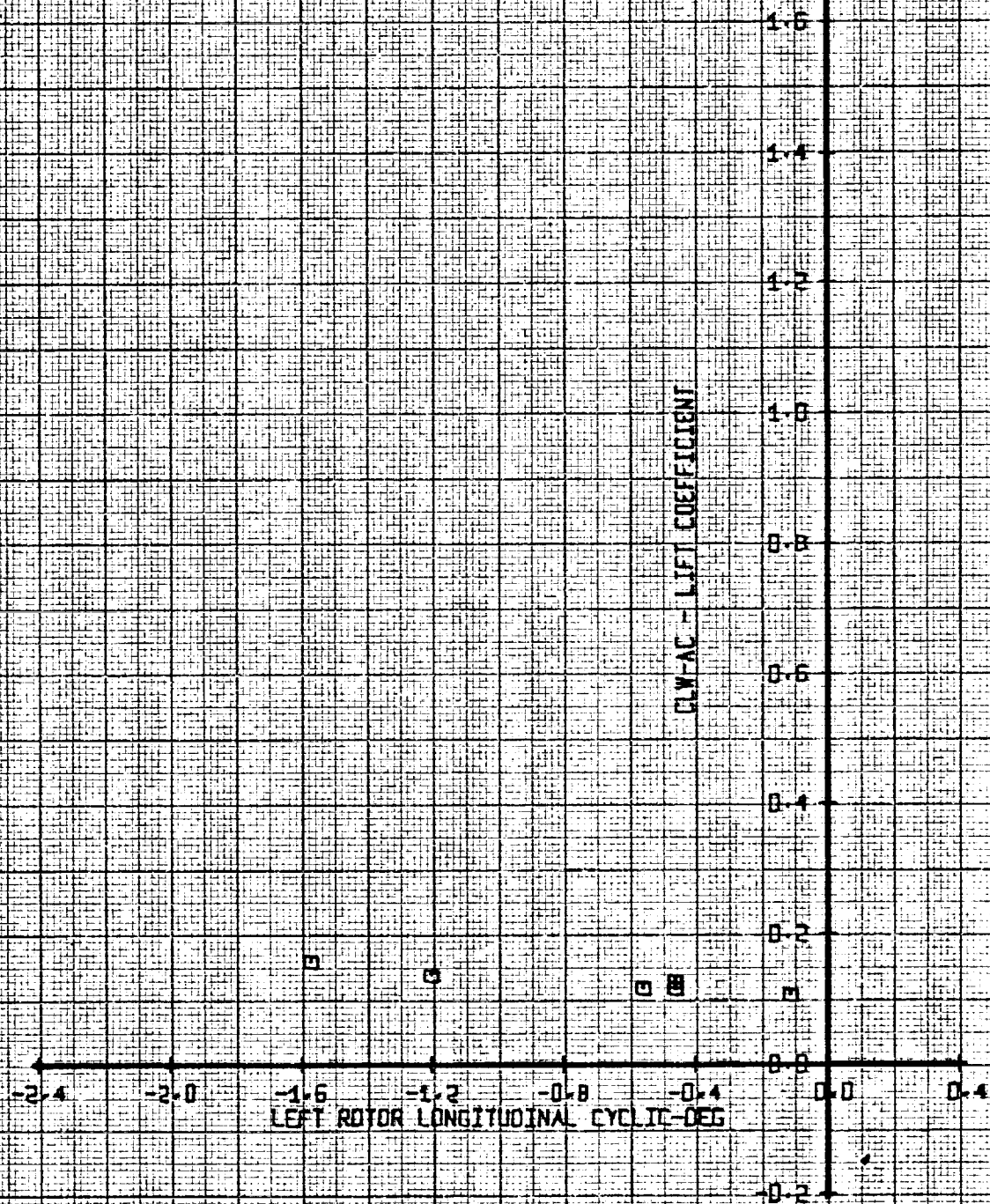
-1

140

□

0

Figure 13-061. Aircraft Lift Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



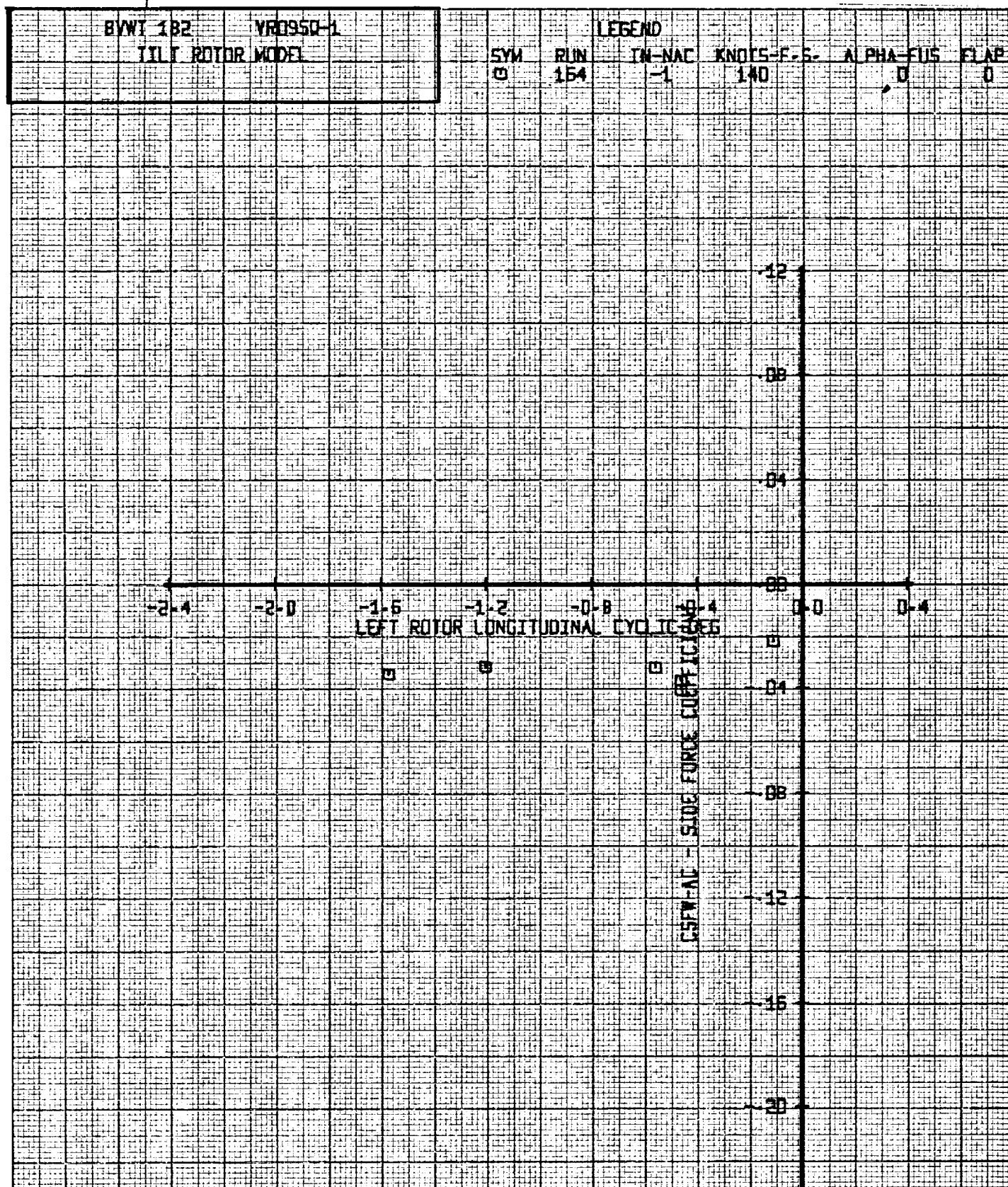
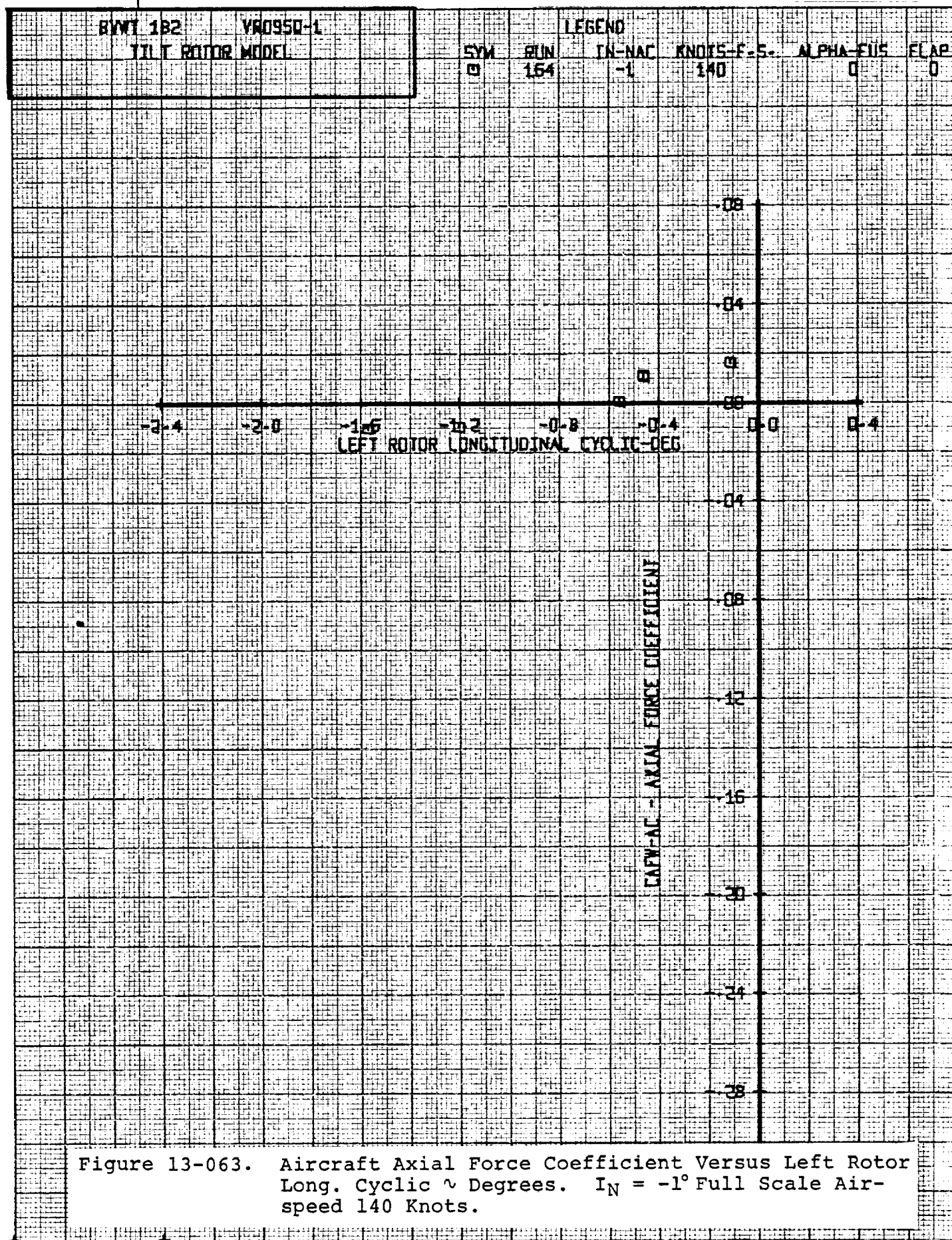


Figure 13-062. Aircraft Side Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



BWT 182 YR0950-1
TILT ROTOR MODEL

LEGEND

SYM	RUN	IN-NAC	KNOTS-F-S	ALPHA-FUS	FLAP
0	154	-1	140	0	0

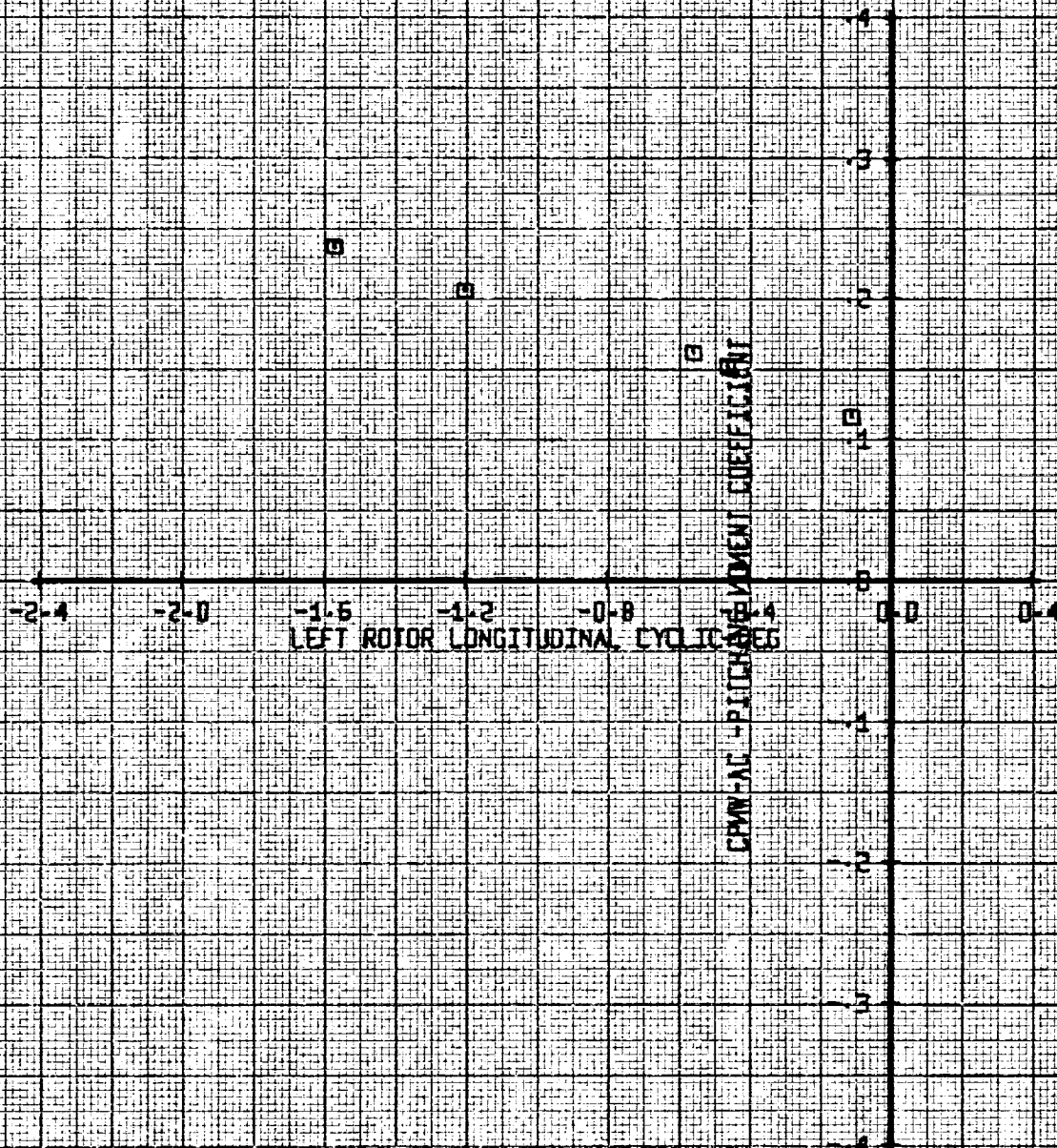


Figure 13-064. Aircraft Pitching Moment Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

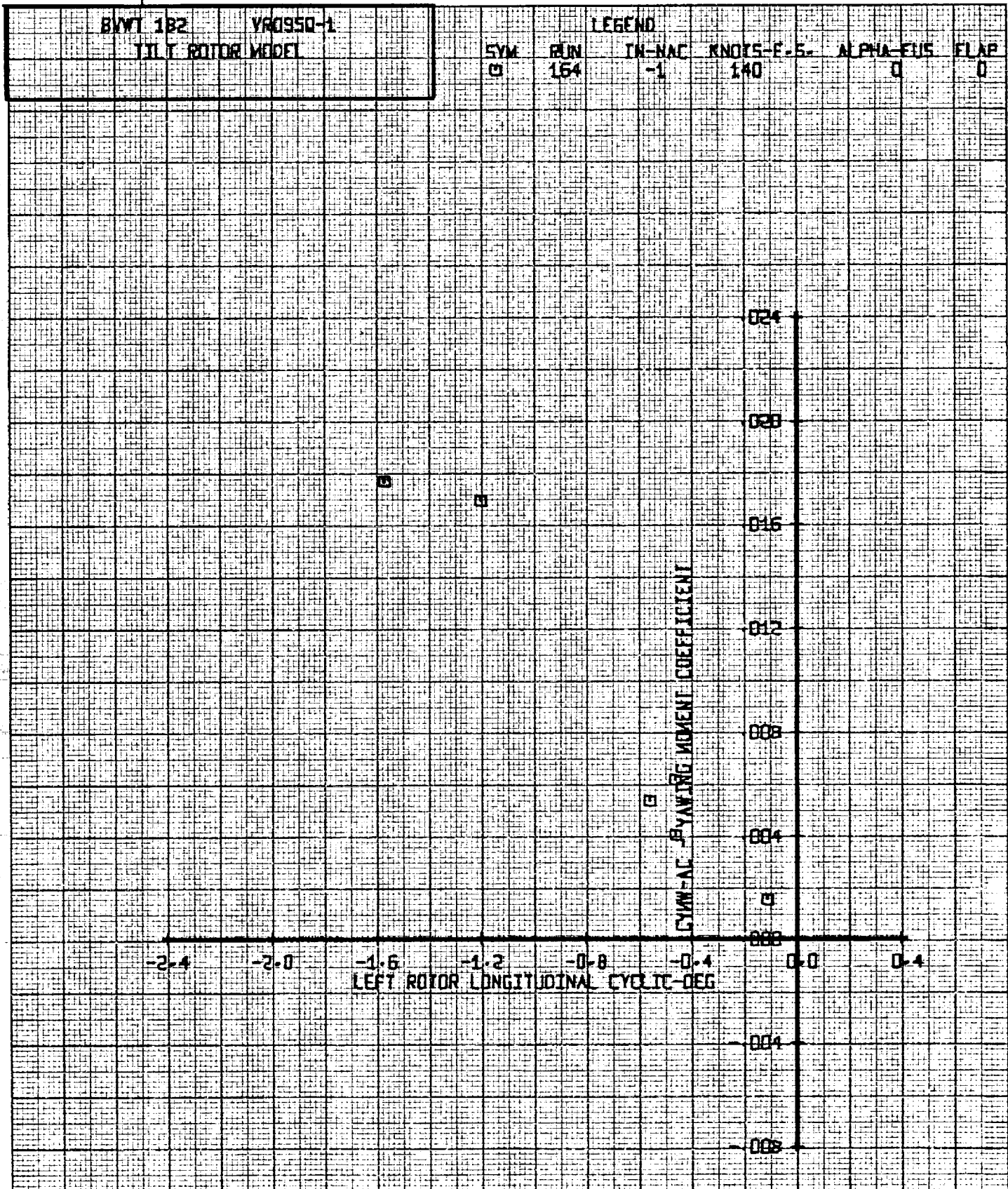


Figure 13-065. Aircraft Yawing Moment Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

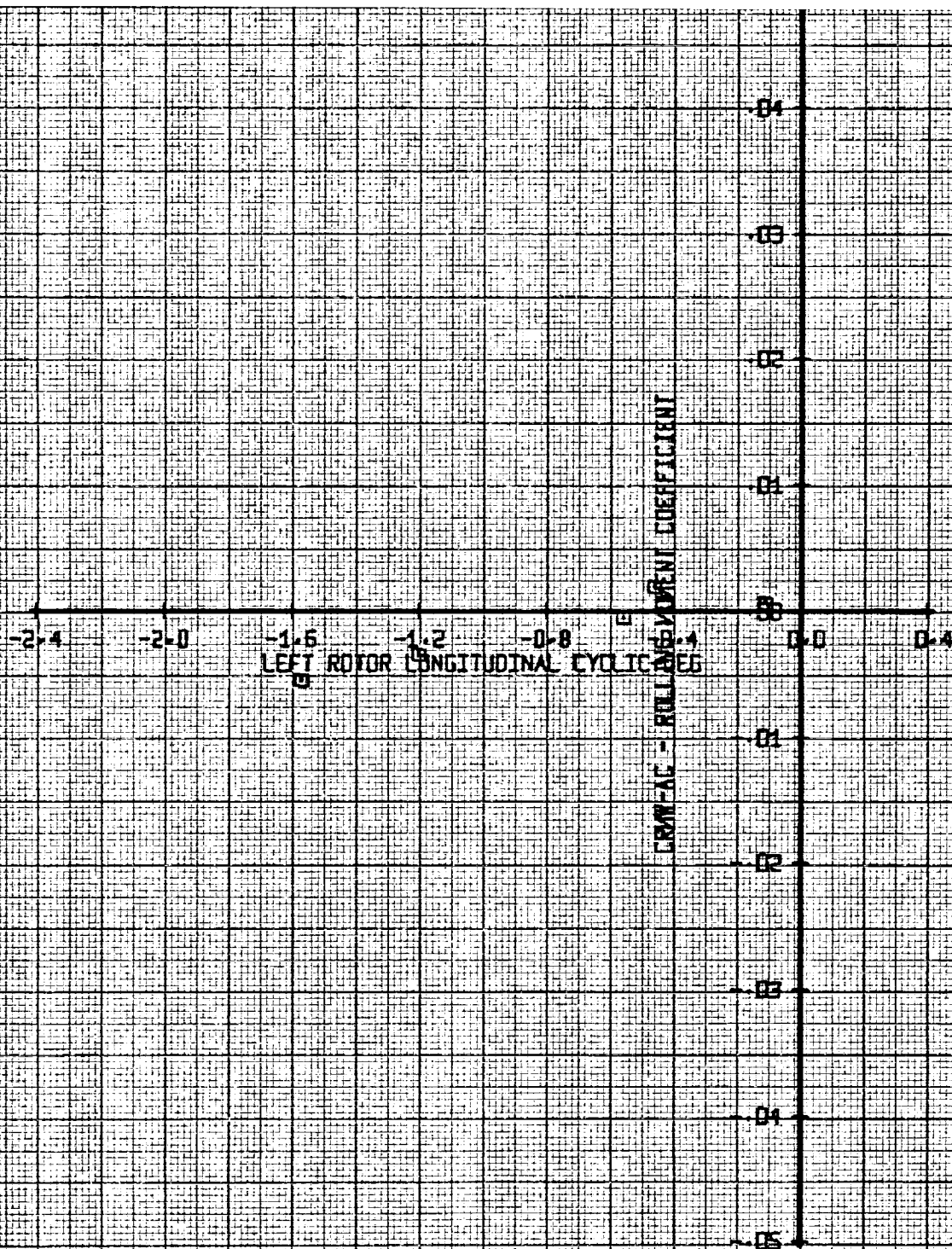
BVWT 182 YR095Q-1

TILT ROTOR MODEL

LEGEND

SYM
0RUN
154IN-NAC
-1KNOTS-F.S.
140ALPHA-FUS
0FLAP
0

Figure 13-066. Aircraft Rolling Moment Coefficient Versus Left Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



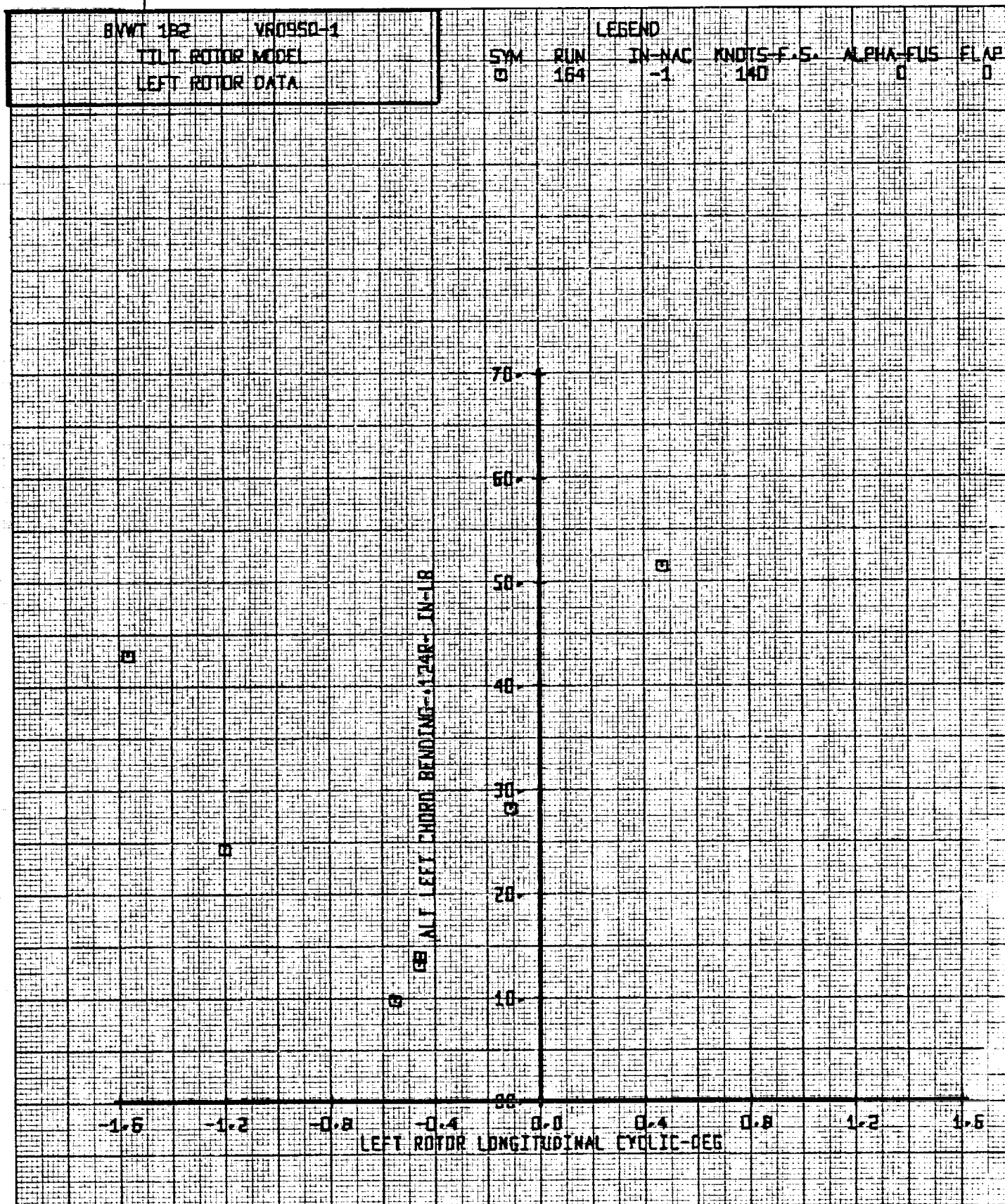
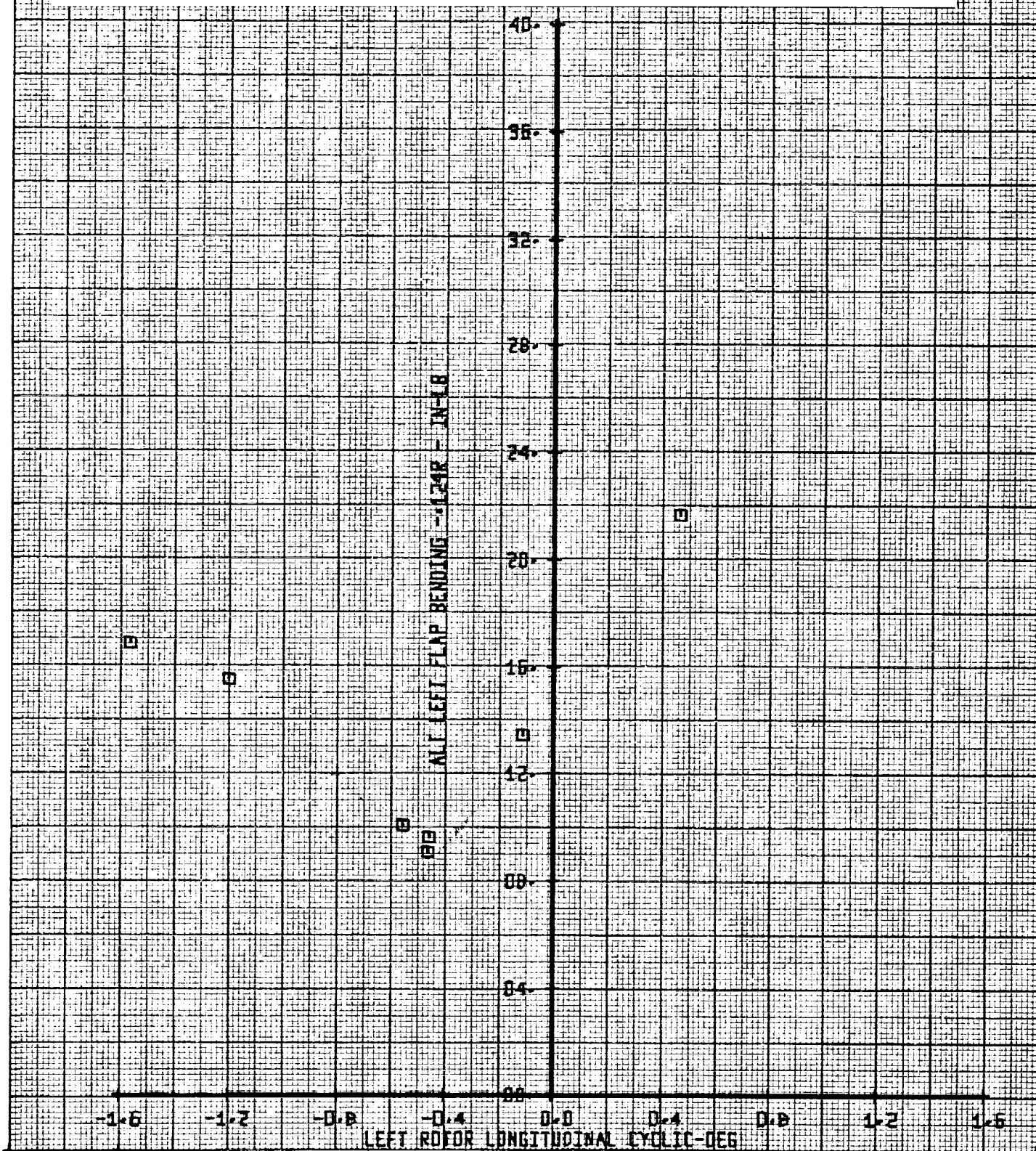


Figure 13-067. Alt. Left Chord Bending Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

BVWT 1B2 VRO950-1
TILT ROTOR MODEL
LEFT ROTOR DATA

LEGEND
SYM RUN IN-MAL KNOTS-F-5 ALPHA-FUS FLAP
□ 154 -1 140 0 0

Figure 13-068. Alt. Left Flap Bending Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



BVWT 182 YR09SR-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

154

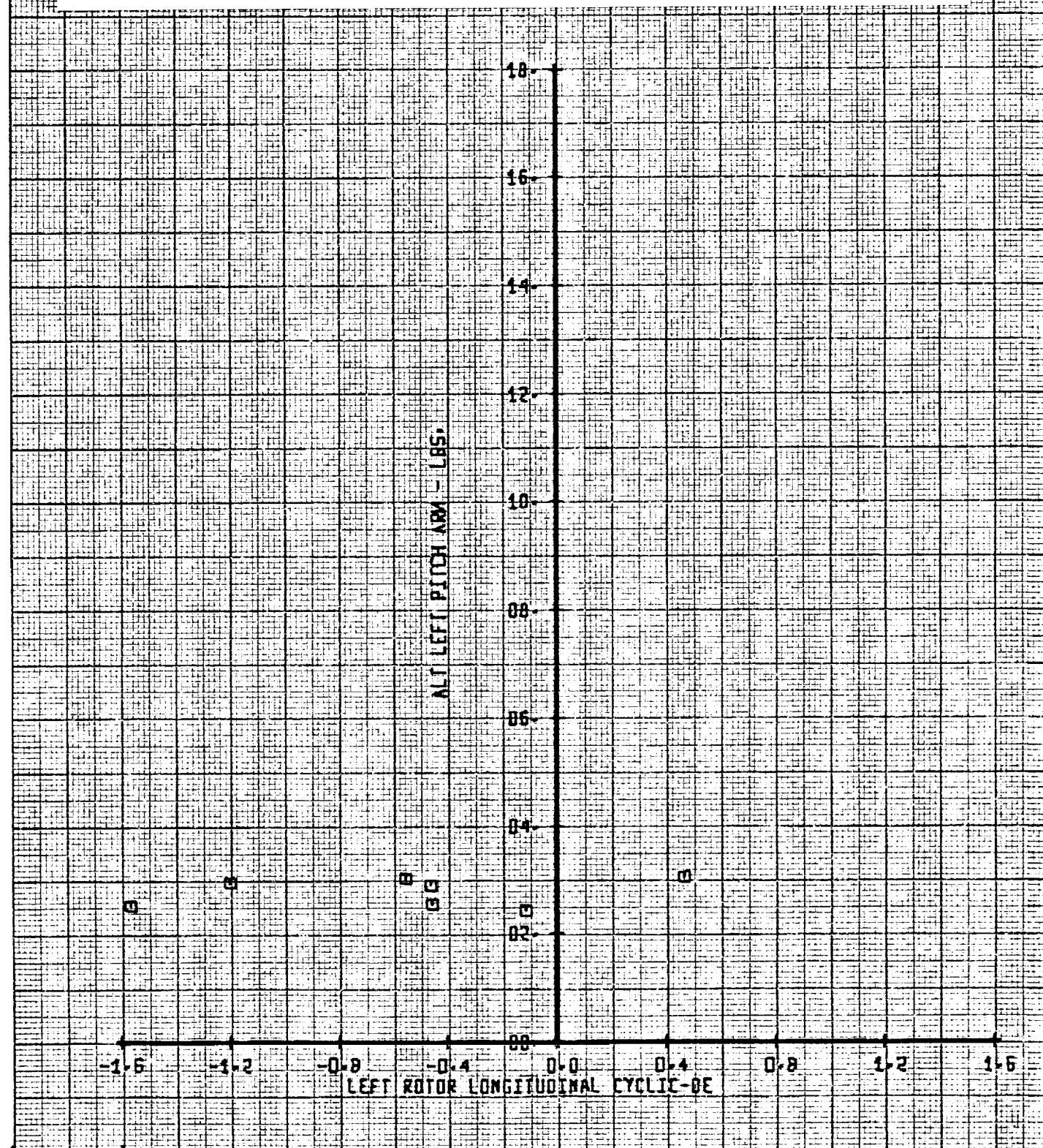
-1

140

0

0

Figure 13-069. Alt. Left Pitch Link Load Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



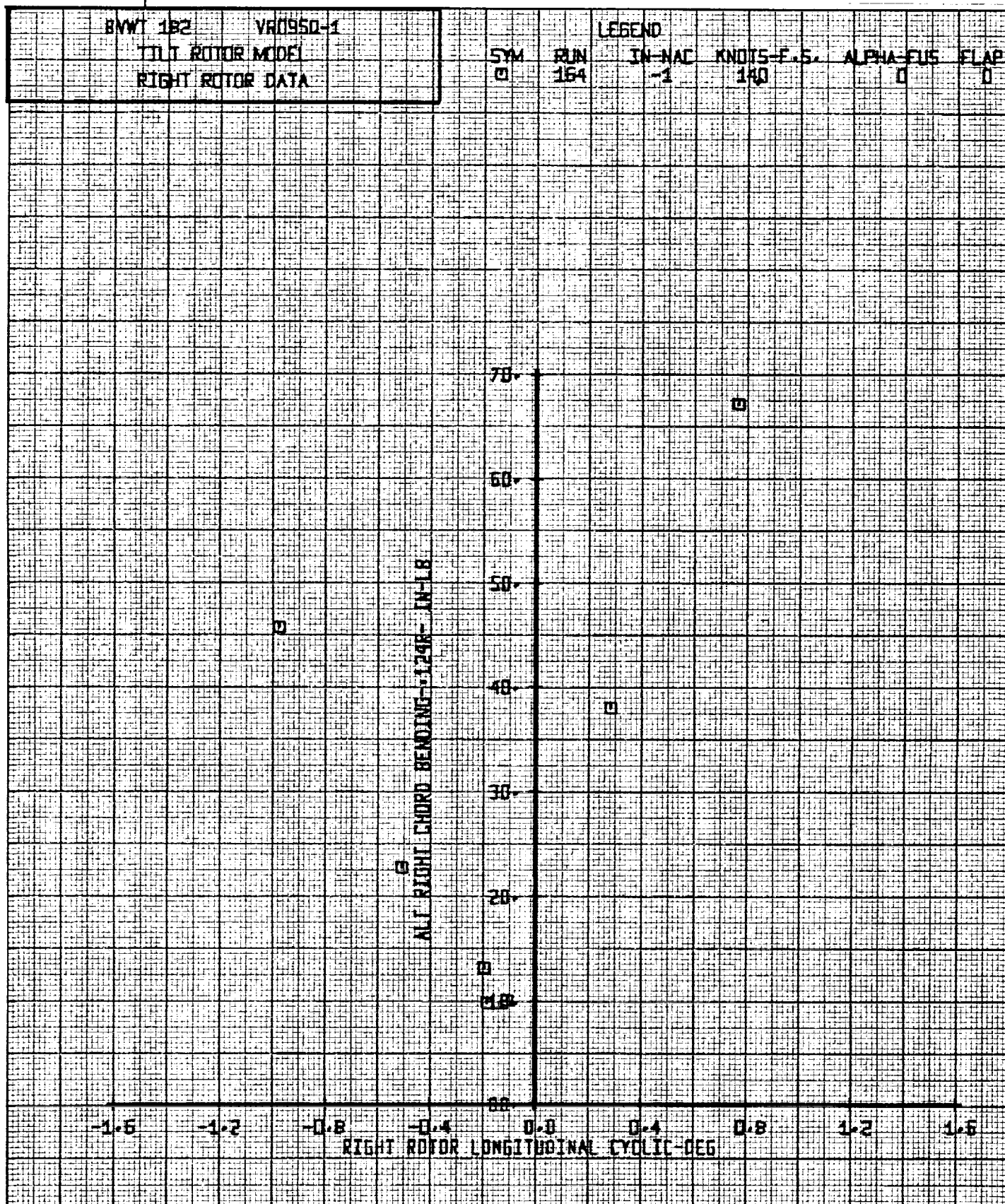


Figure 13-070. Alt. Right Chord Bending Versus Right Rotor Long. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

BVWT 1B2 V80950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

154

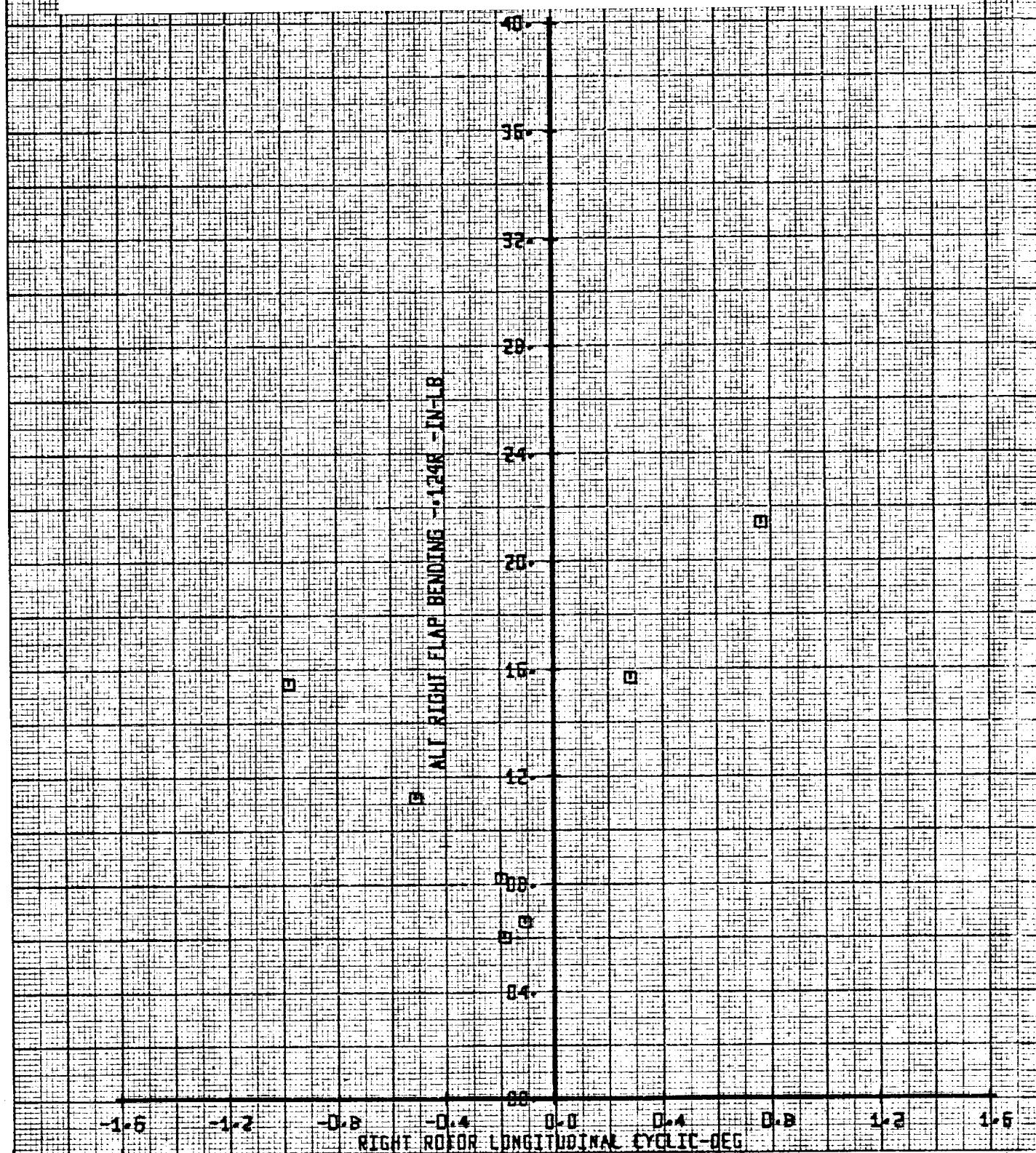
-1

140

□

0

Figure 13-071. Alt. Right Flap Bending Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



BVWT 182 VR0950-1

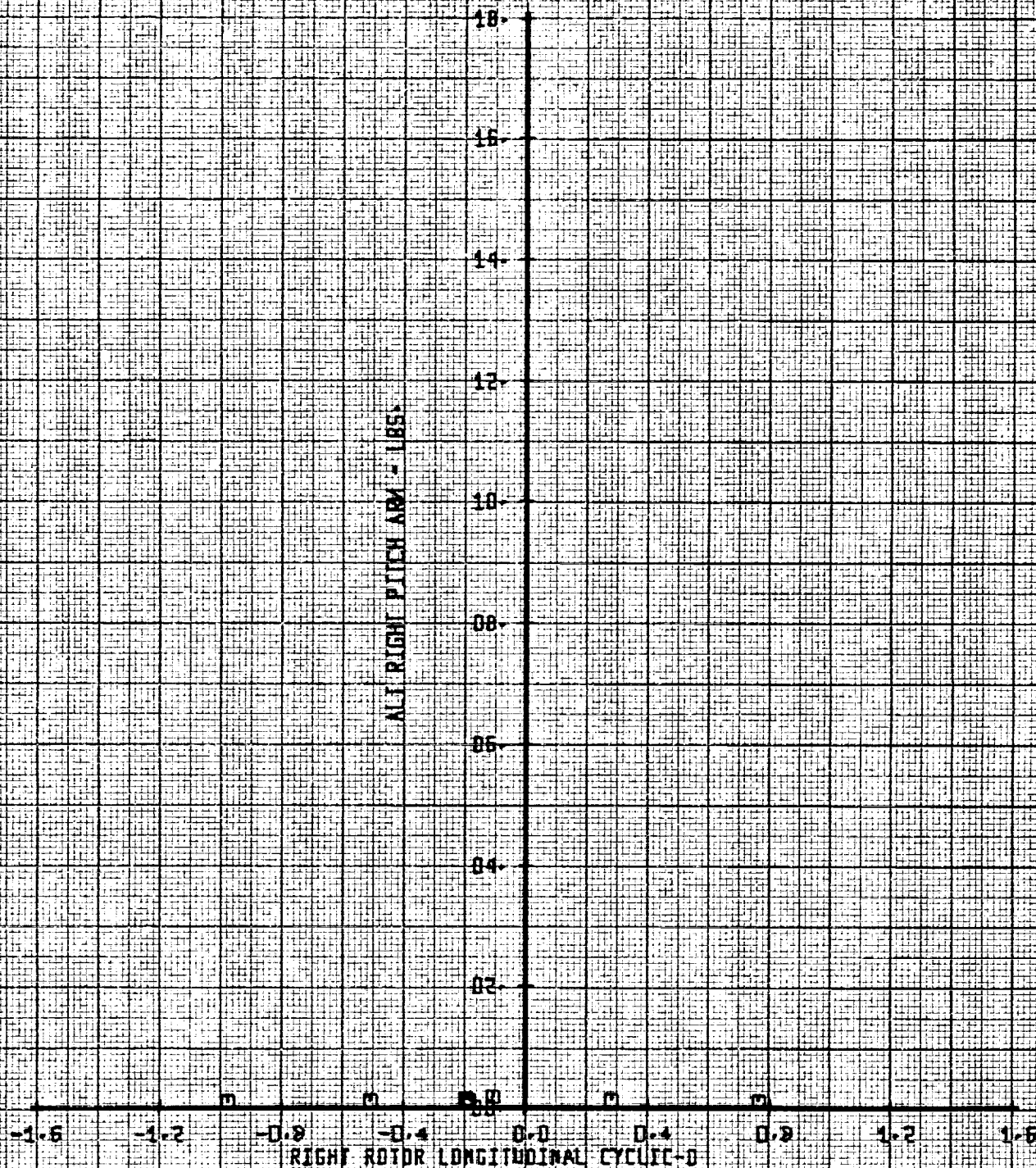
TILT ROTOR MODE

RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FLS	FLAP
0	164	-1	140	0	0

Figure 13-072. Alt. Right Pitch Link Load Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 140 Knots.



BWV 182 VRC950-1

TILT ROTOR MODE

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

0

163

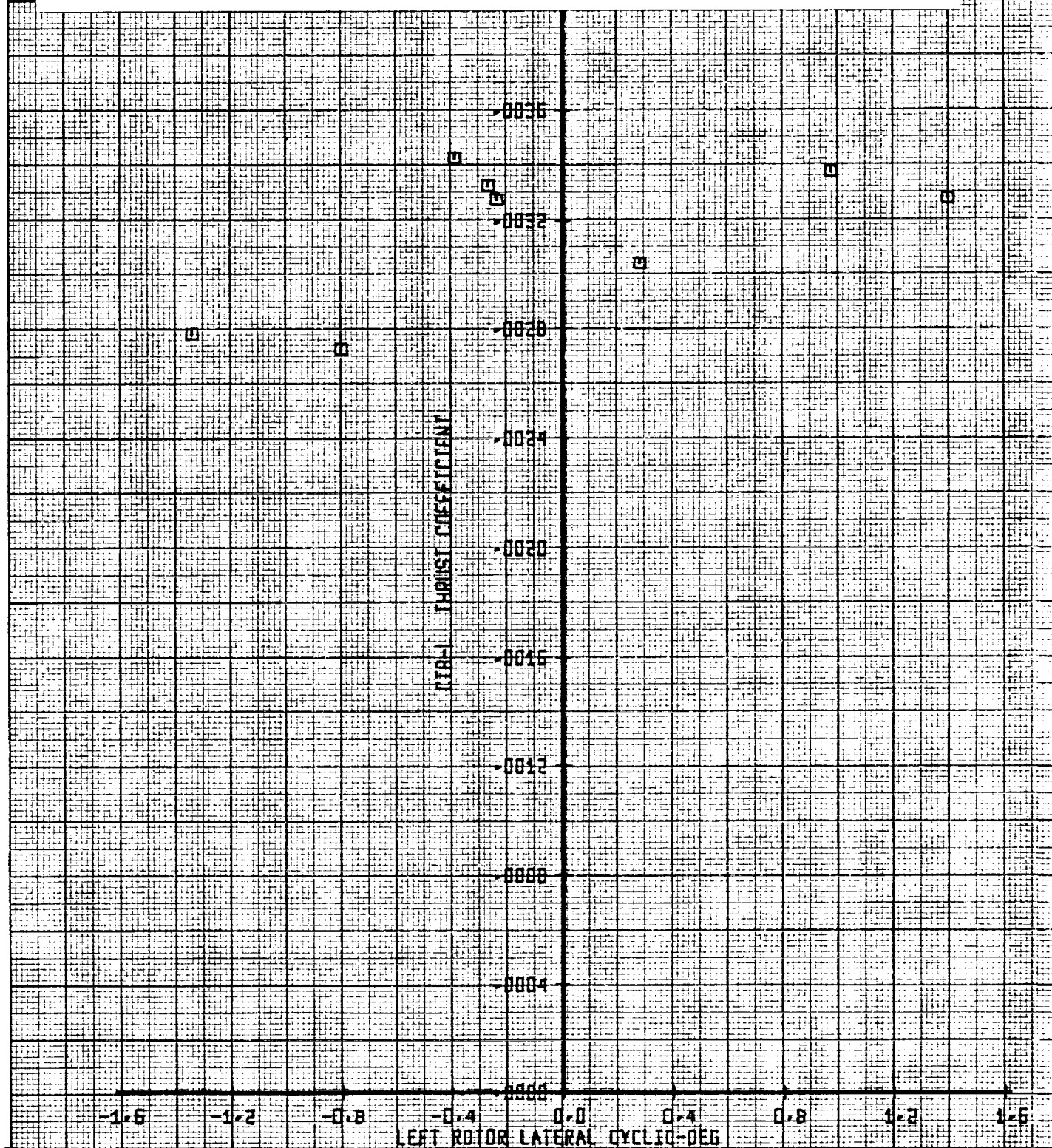
-1

140

0

0

Figure 13-073. Left Rotor Thrust Coefficient Versus Left Rotor Lat. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 140 Knots.



BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-DEG

FLAP

□

163

-1

140

0

0

Figure 13-074. Left Rotor Power Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 140 Knots.

CPB-1 POWER COEFFICIENT

-1.6 -1.2 -0.8 -0.4 0.0 0.4 0.8 1.2 1.6
LEFT ROTOR LATERAL CYCLIC-DEG

100

SET 112
BVWT 182

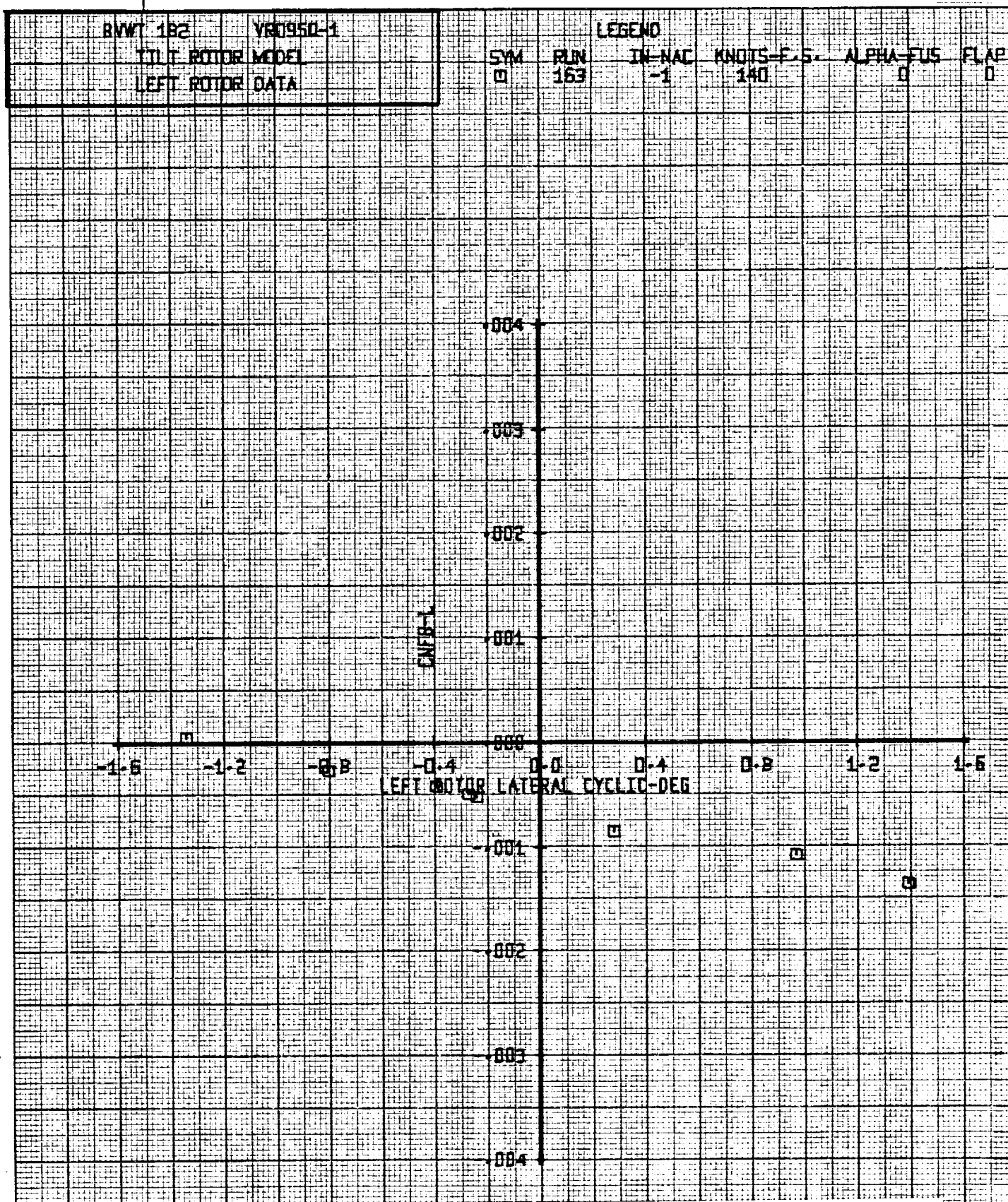


Figure 13-075. Left Rotor Normal Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

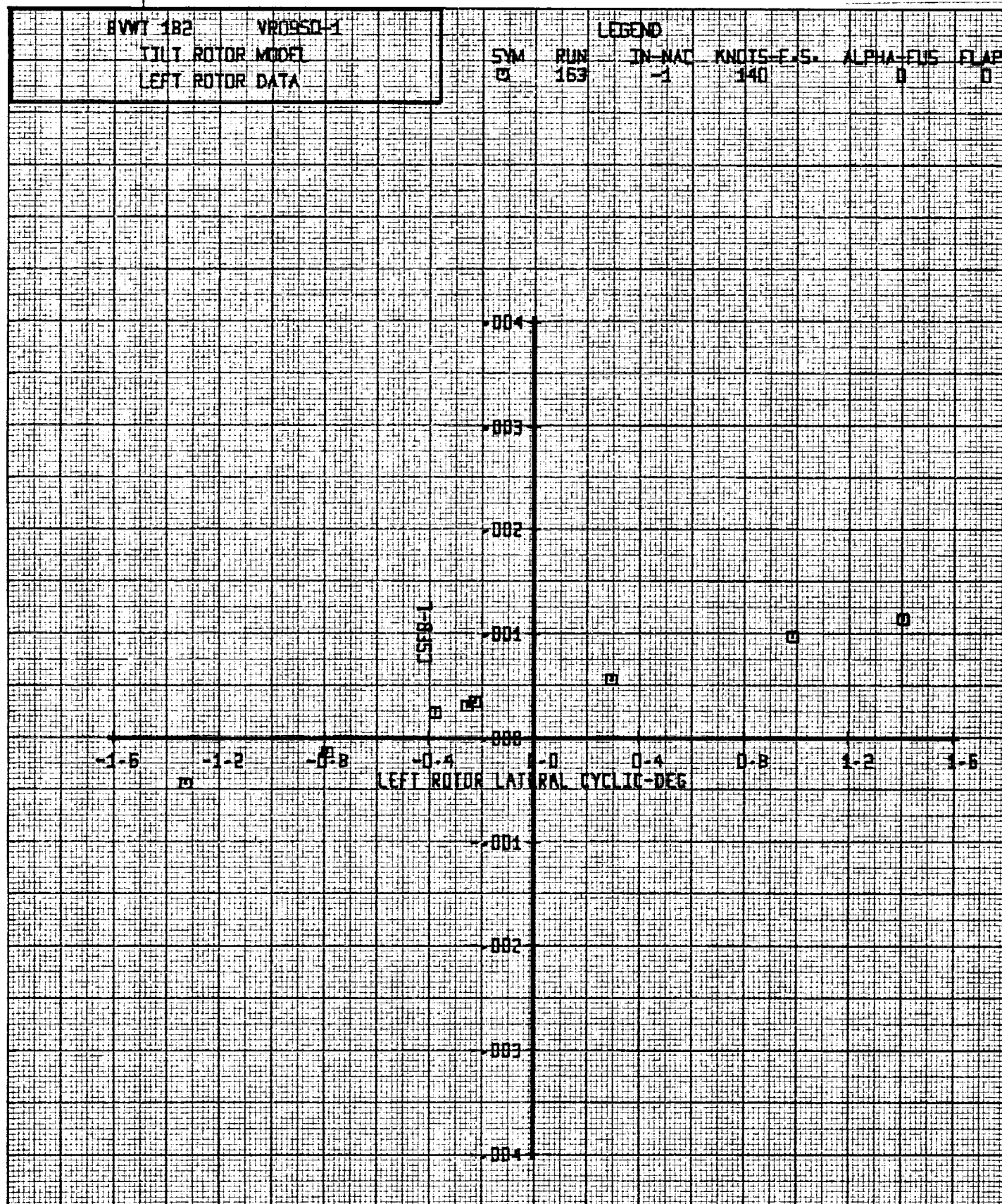


Figure 13-076. Left Rotor Side Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

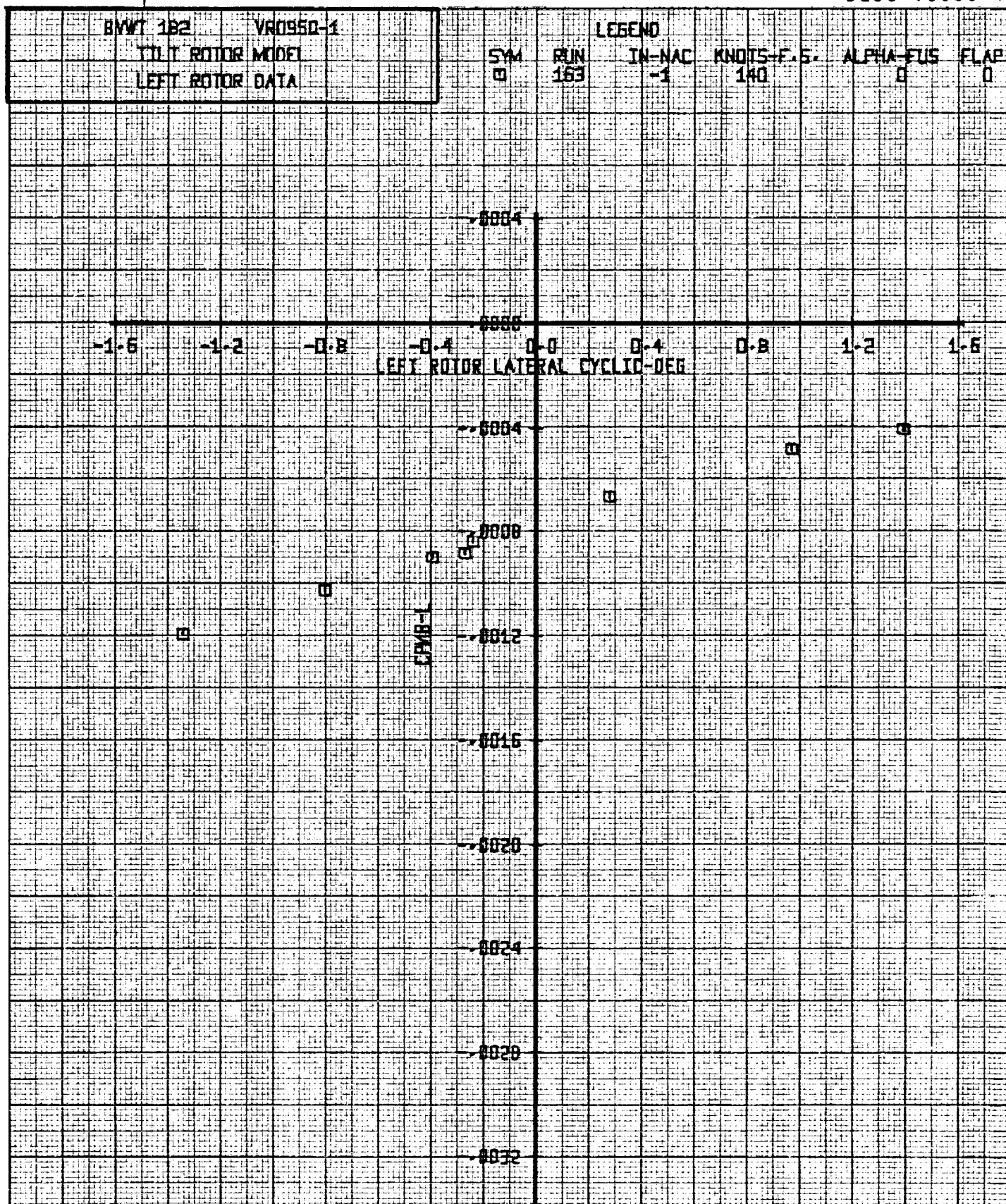


Figure 13-077. Left Rotor Pitching Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

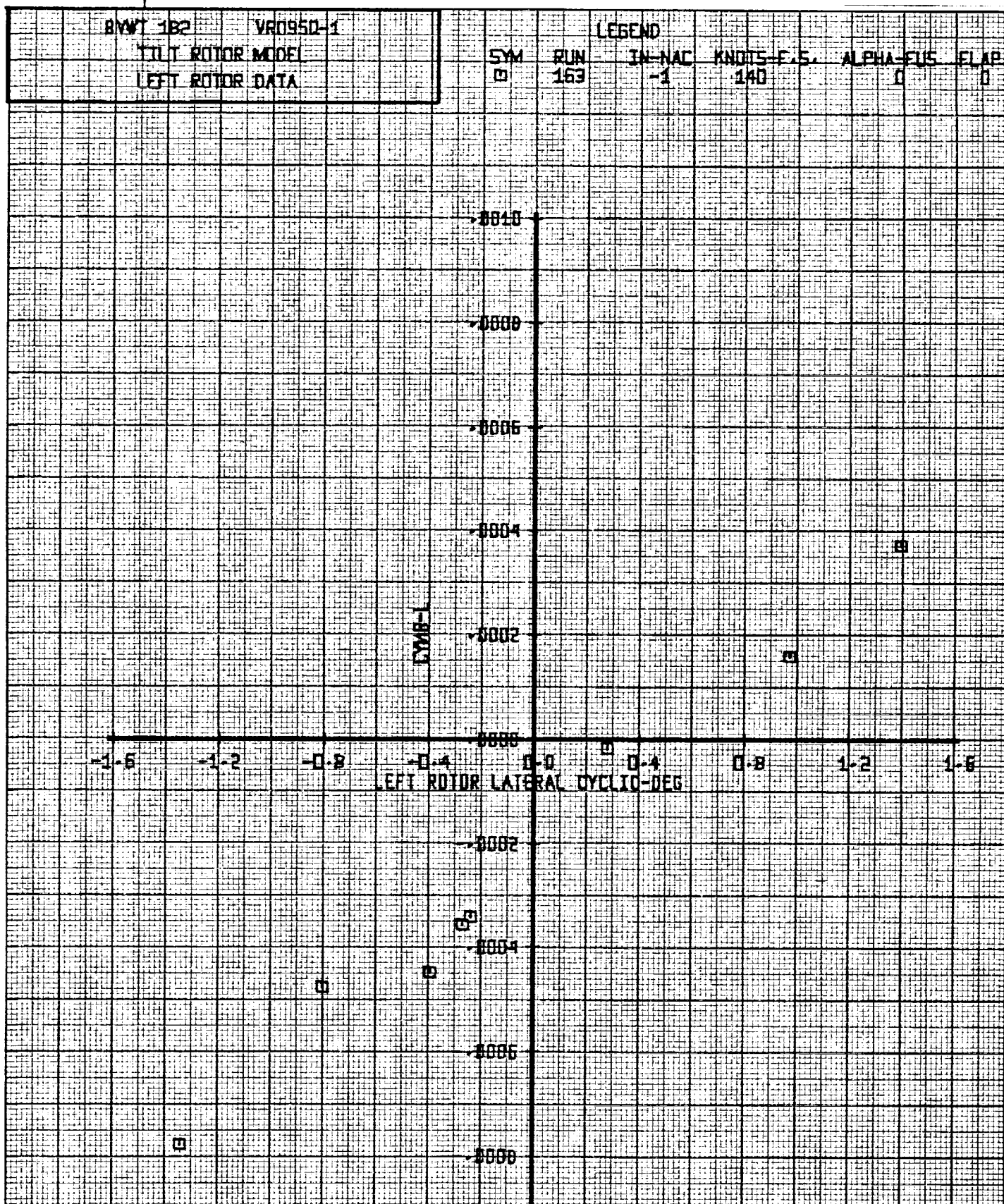


Figure 13-078. Left Rotor Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

BVWT 182 YR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

0

163

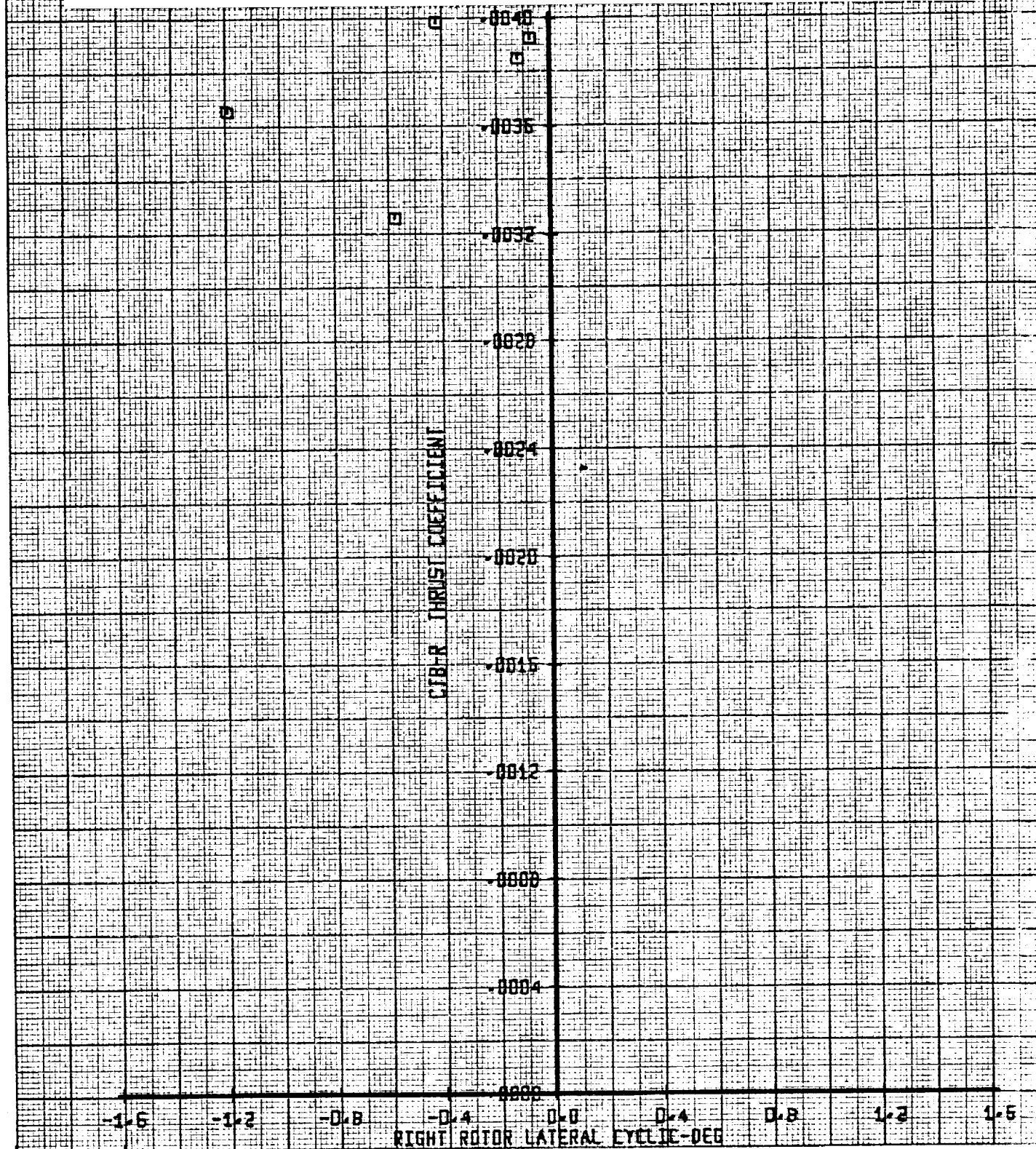
-1

140

0

0

Figure 13-079. Right Rotor Thrust Coefficient Versus Right Lat. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



BWV 162	VR0950-1
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TYLT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

541

FLIN

IN-NAC

KNOTS-F.E.

ALPHA-EUS

Q14A



153

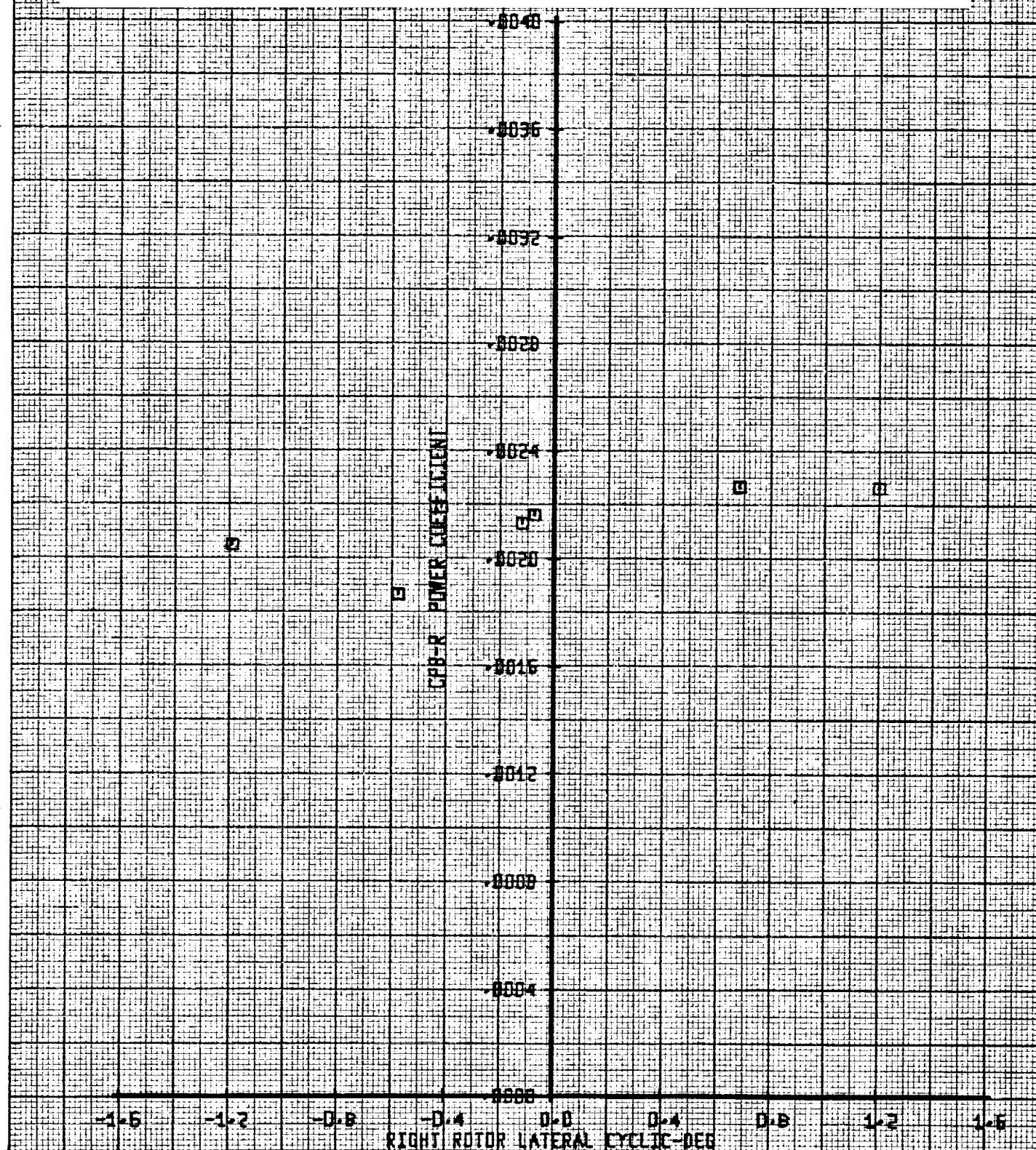
2000

禁烟

4

2

Figure 13-080. Right Rotor Power Coefficient Versus Right Rotor Lat. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



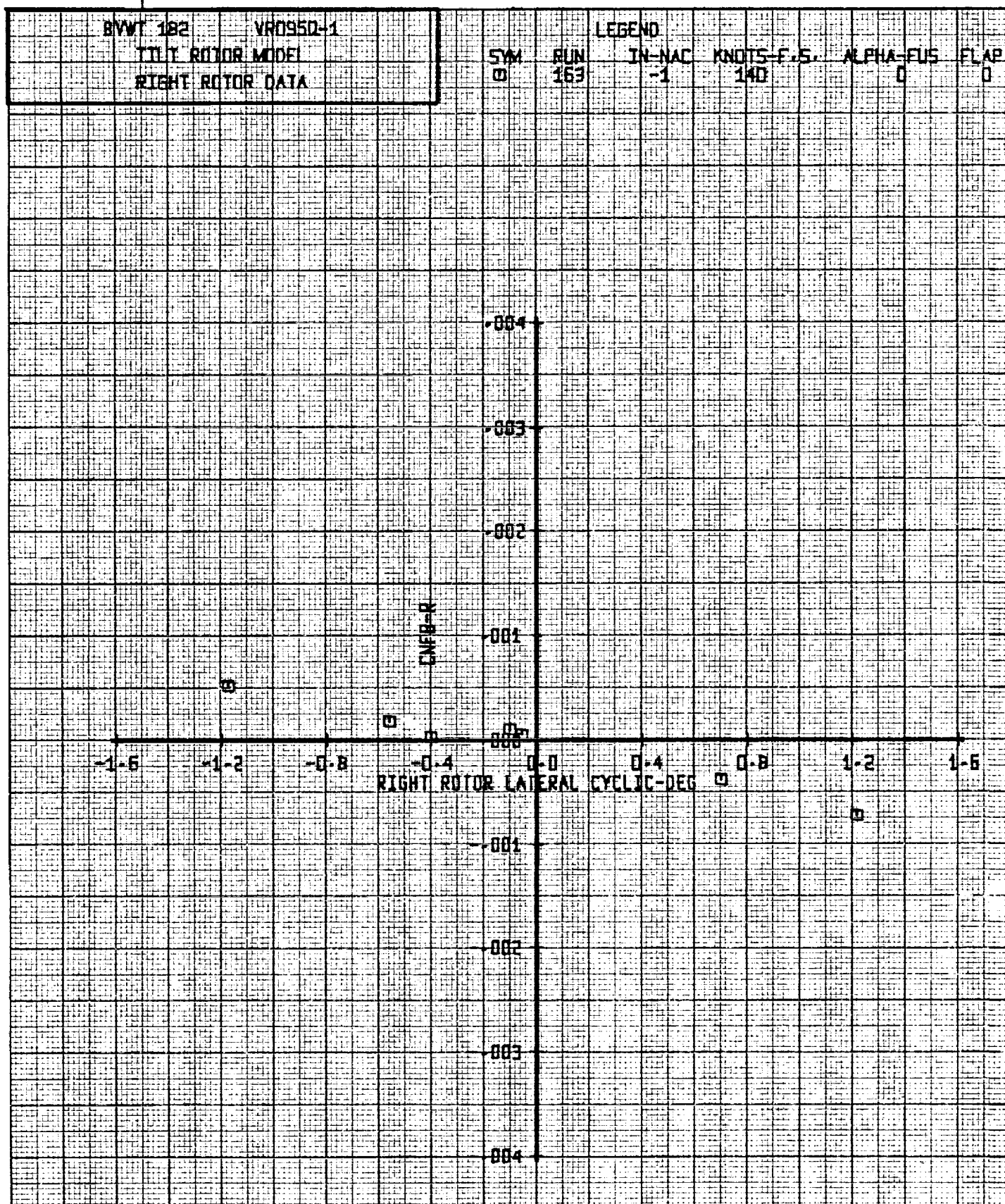
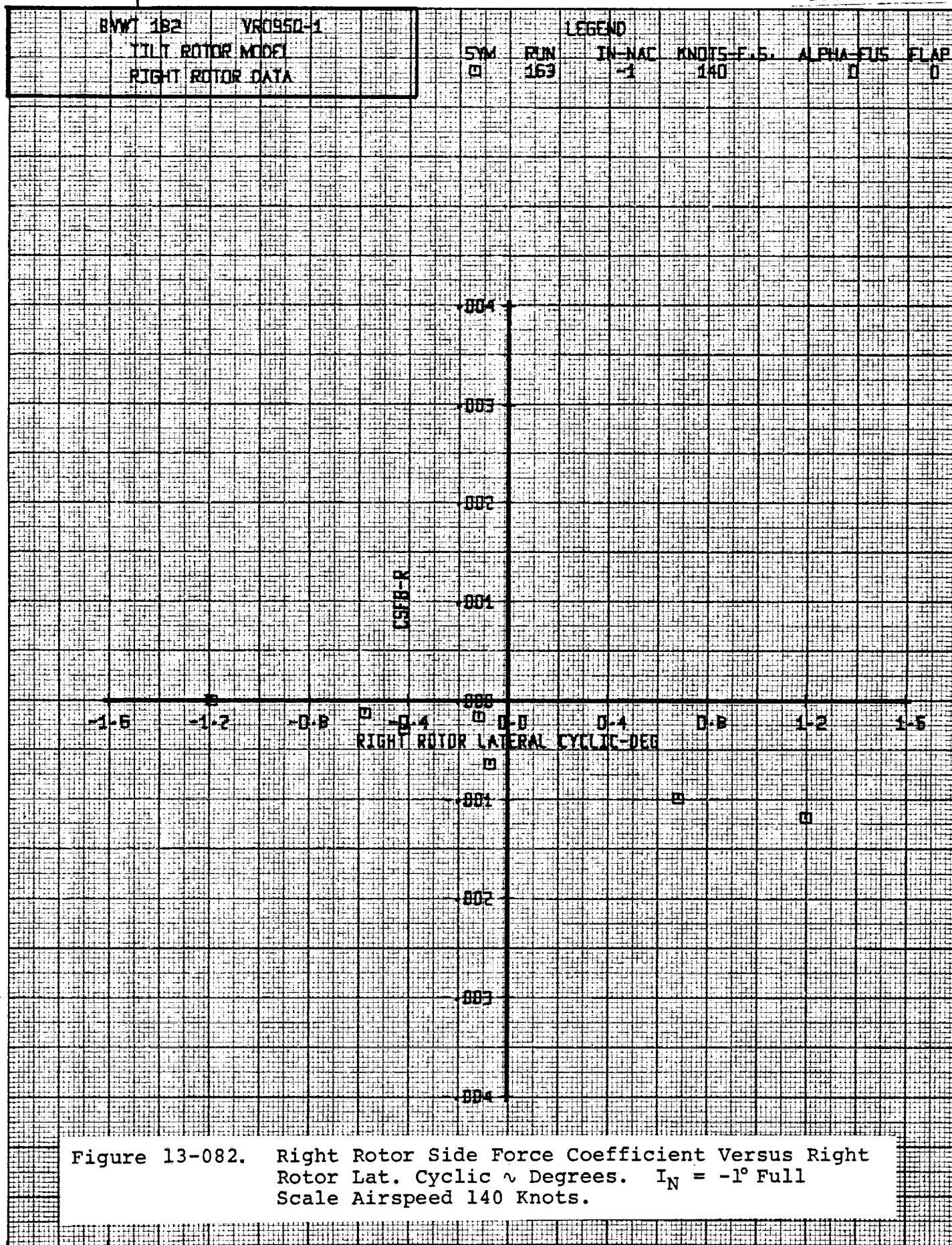


Figure 13-081. Right Rotor Normal Force Coefficient Versus Right Rotor Lat. Cyclic α Degrees. $I_N = -1^\circ$
Full Scale Airspeed 140 Knots.



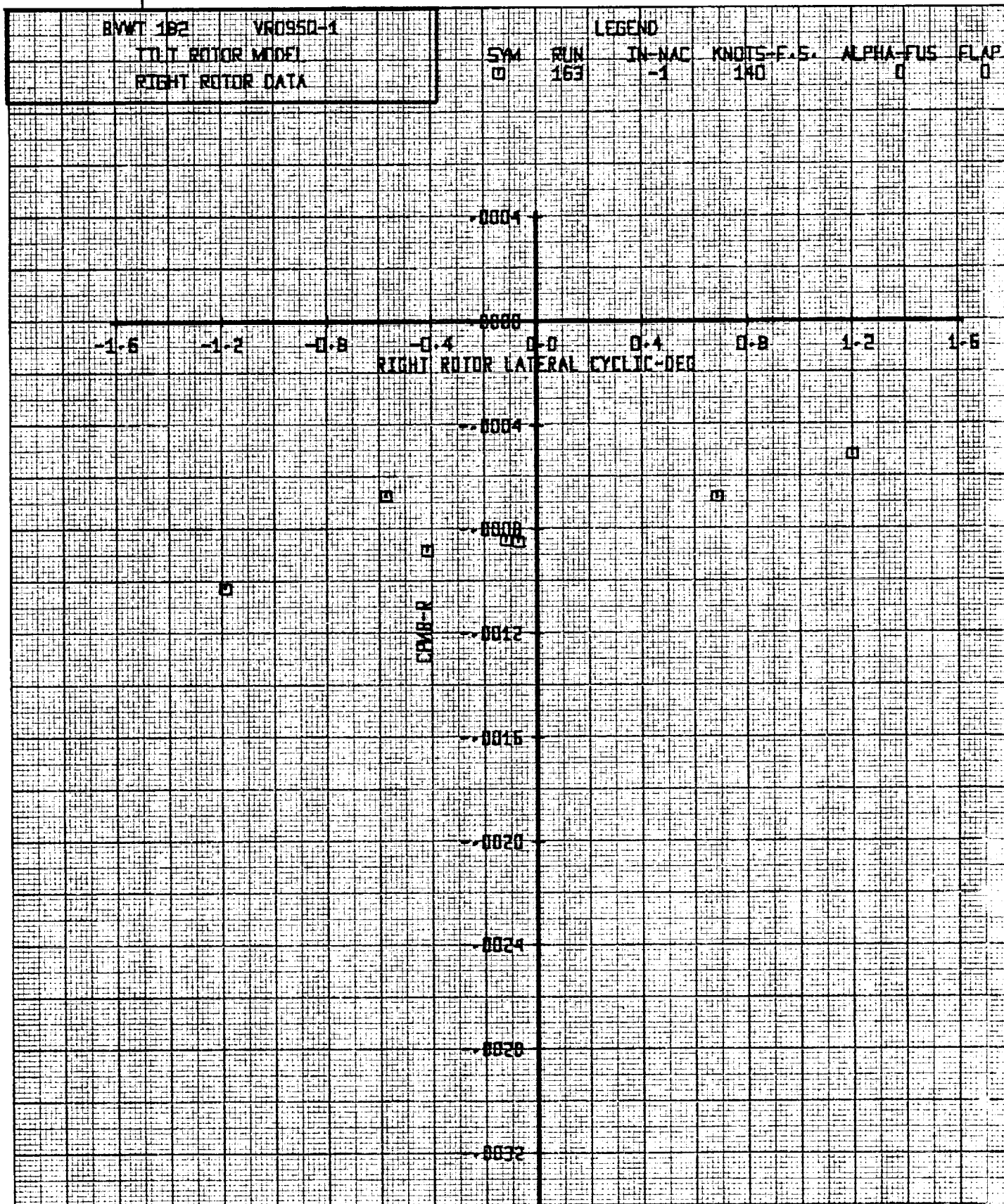


Figure 13-083. Right Rotor Pitching Moment Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$
Full Scale Airspeed 140 Knots.

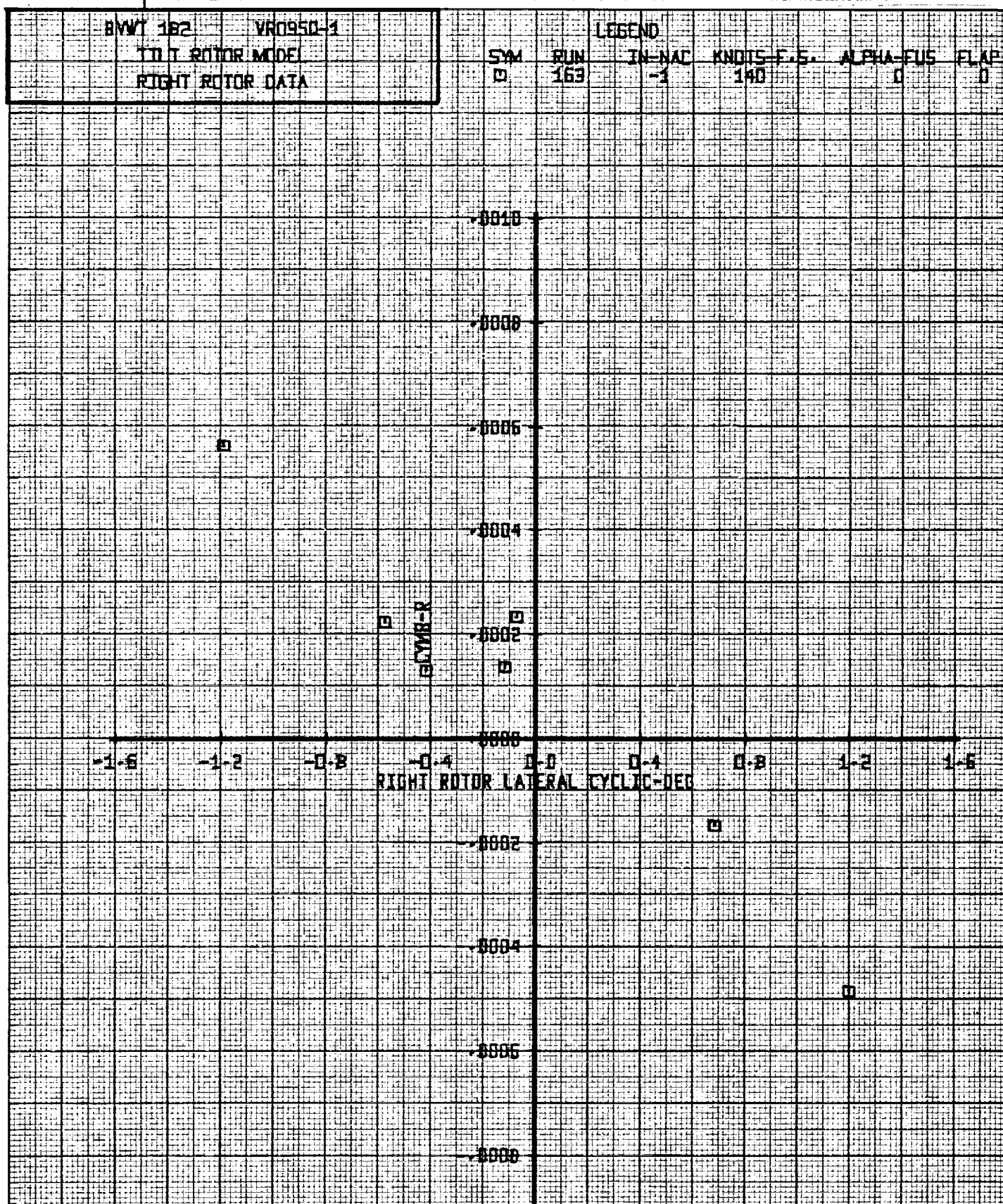


Figure 13-084. Right Rotor Yawing Moment Coefficient Versus Right Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

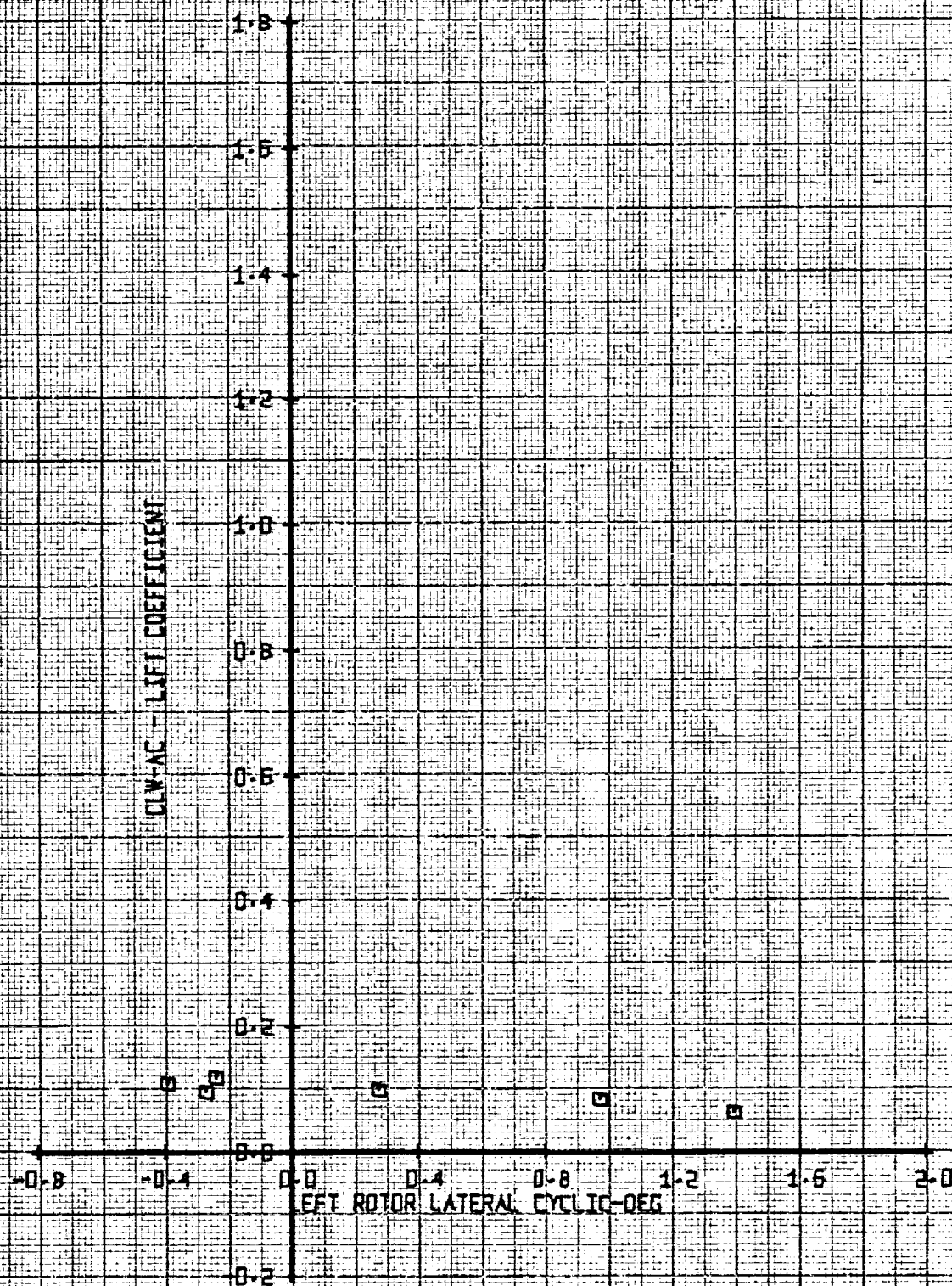
BVWT 182
 TILT ROTOR MODEL

VR0950-1

LEGEND

SYM
□RUN
163IN-NAC
-1KNOTS-F-5
140ALPHA-FUS
0FLAP
0

Figure 13-085. Aircraft Lift Coefficient Versus Left Rotor Lat. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



111

 SET 112
 BVWT 182

 ET 112
 WT 182

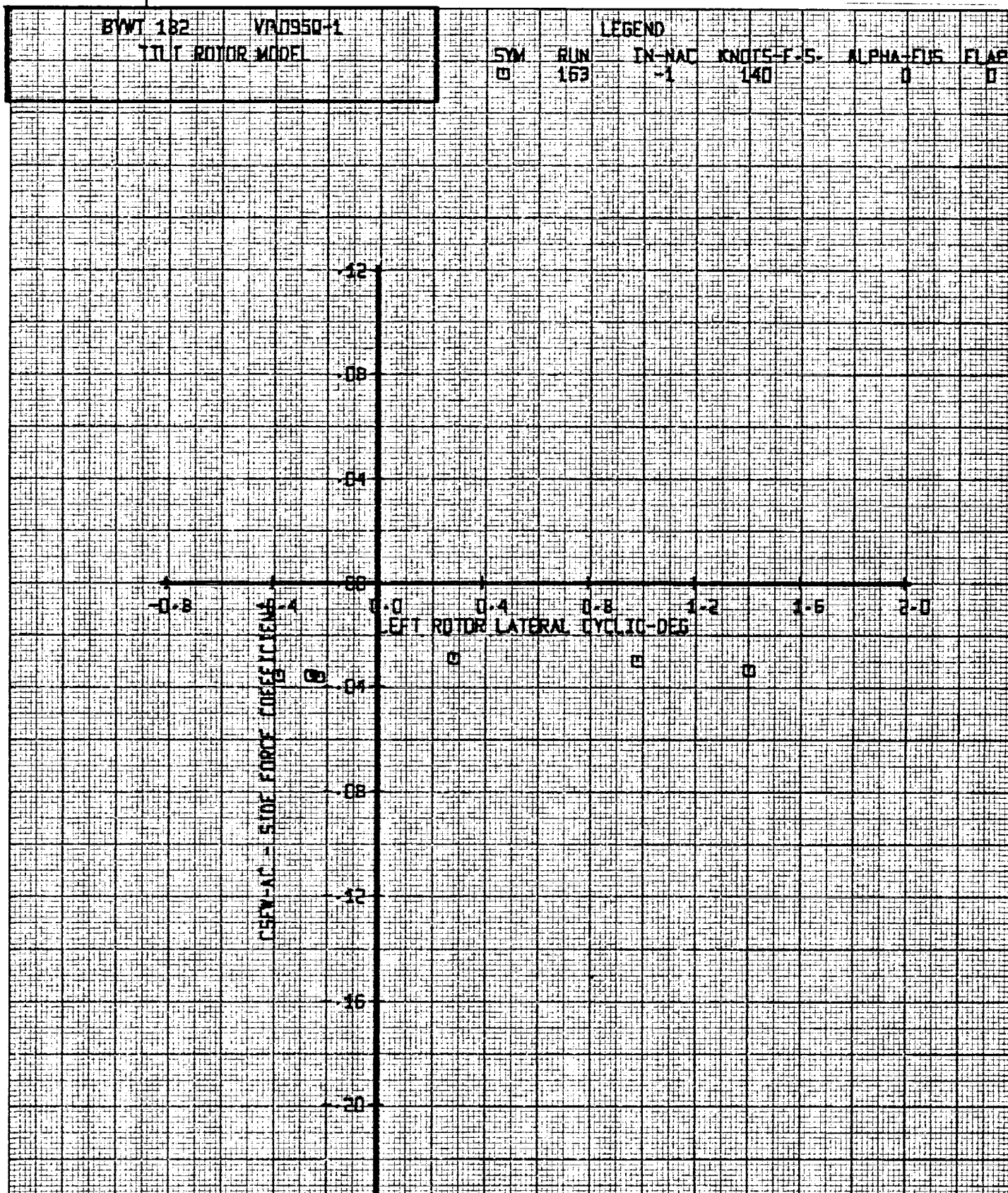


Figure 13-086. Aircraft Side Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Air-speed 140 Knots.

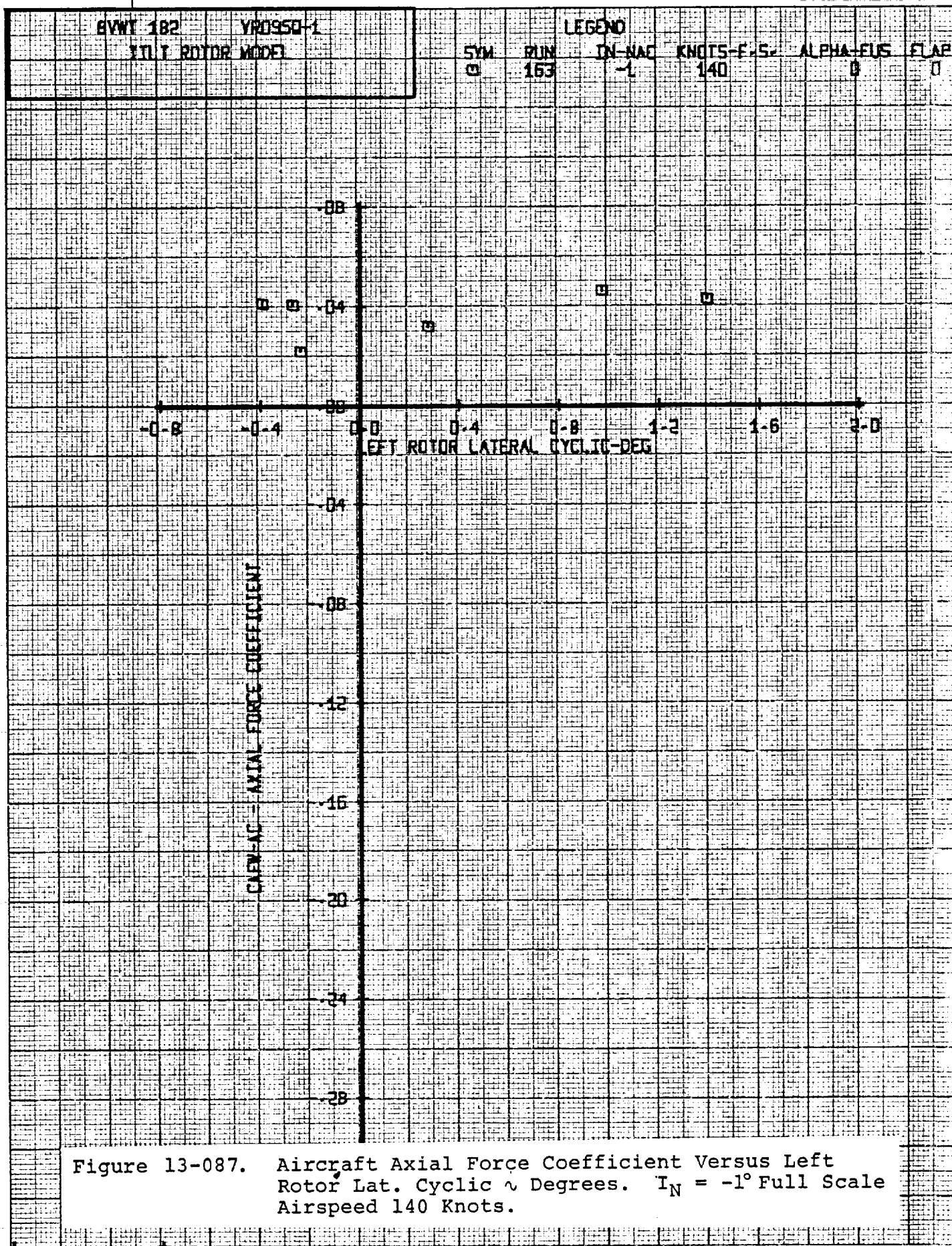
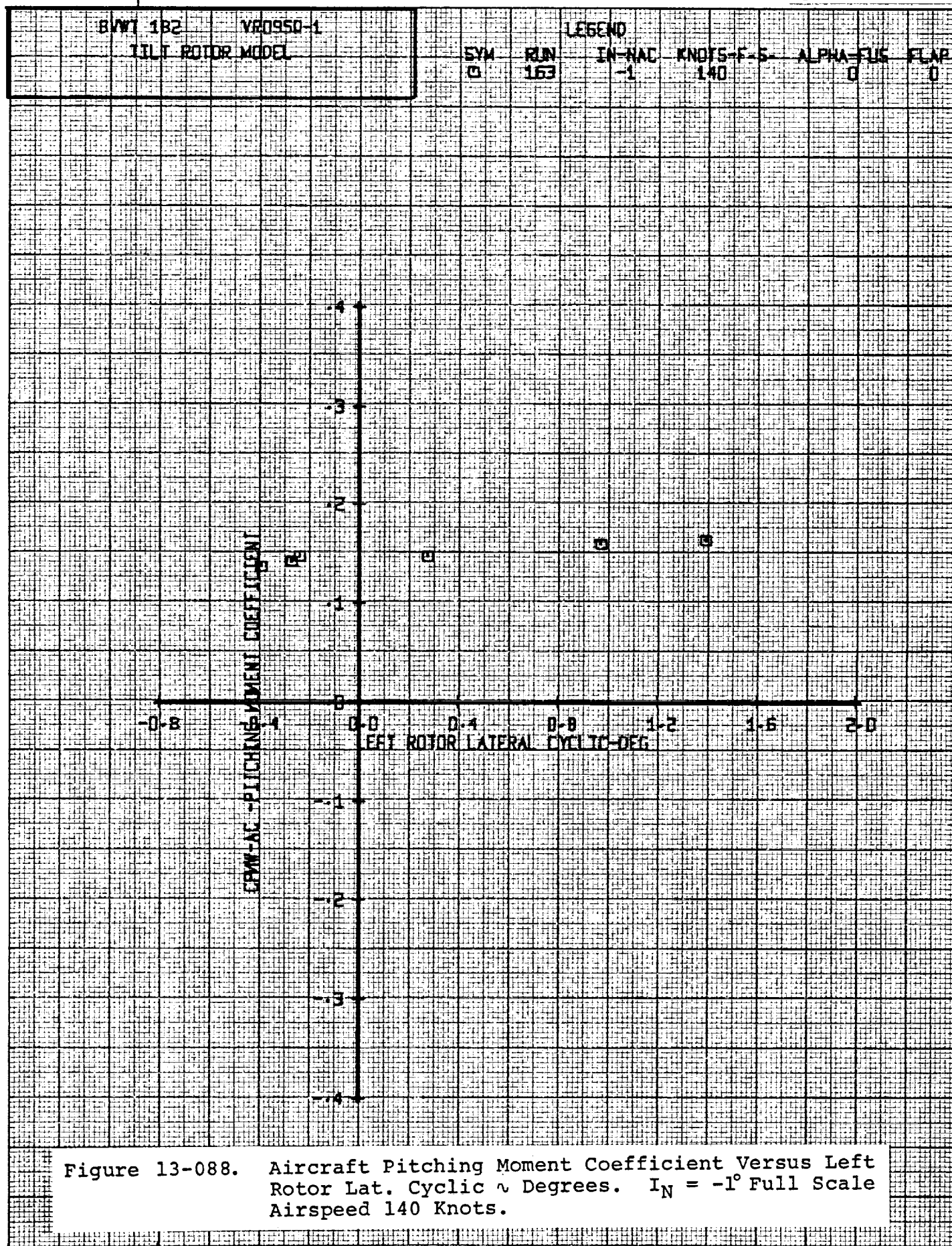
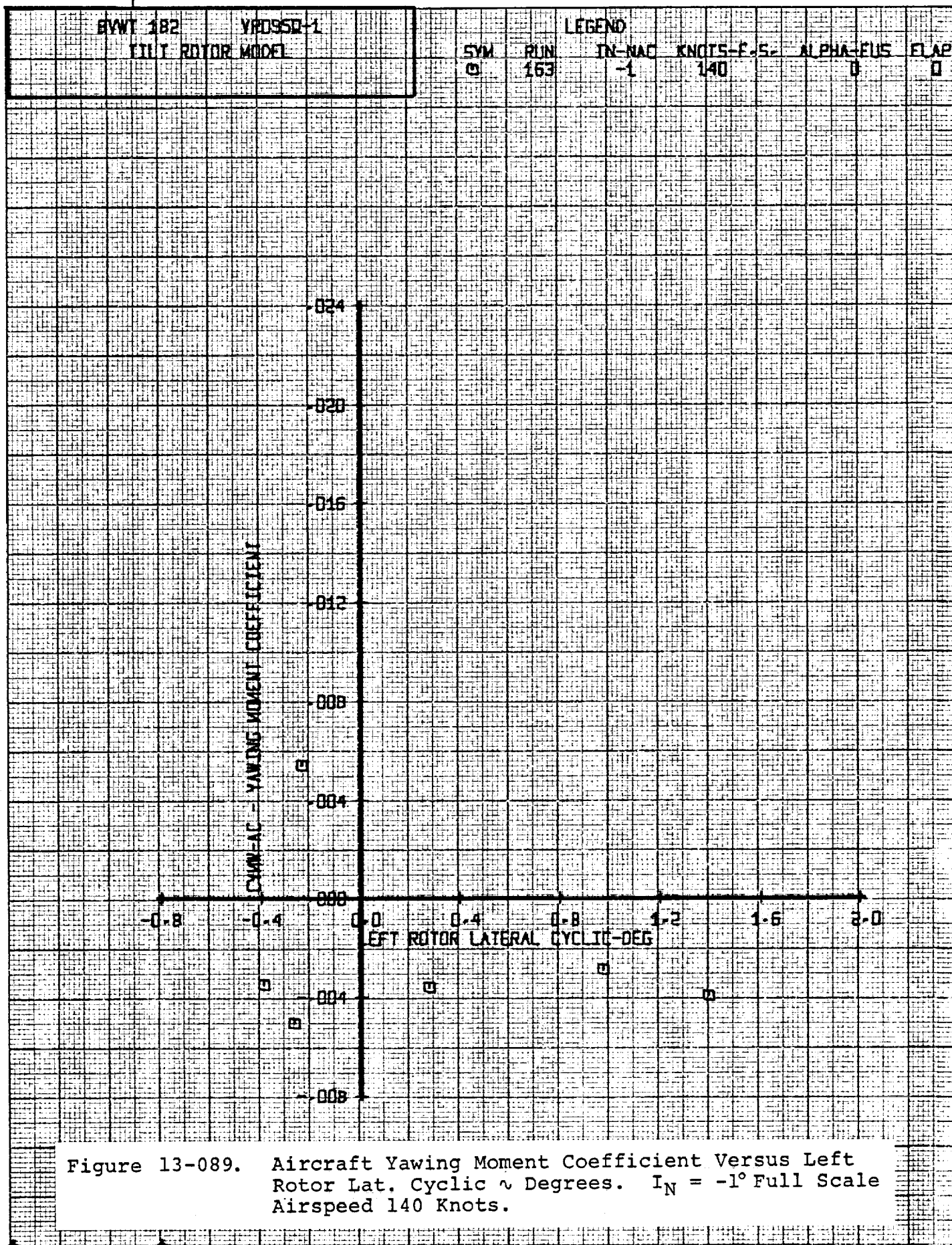


Figure 13-087. Aircraft Axial Force Coefficient Versus Left Rotor Lat. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.





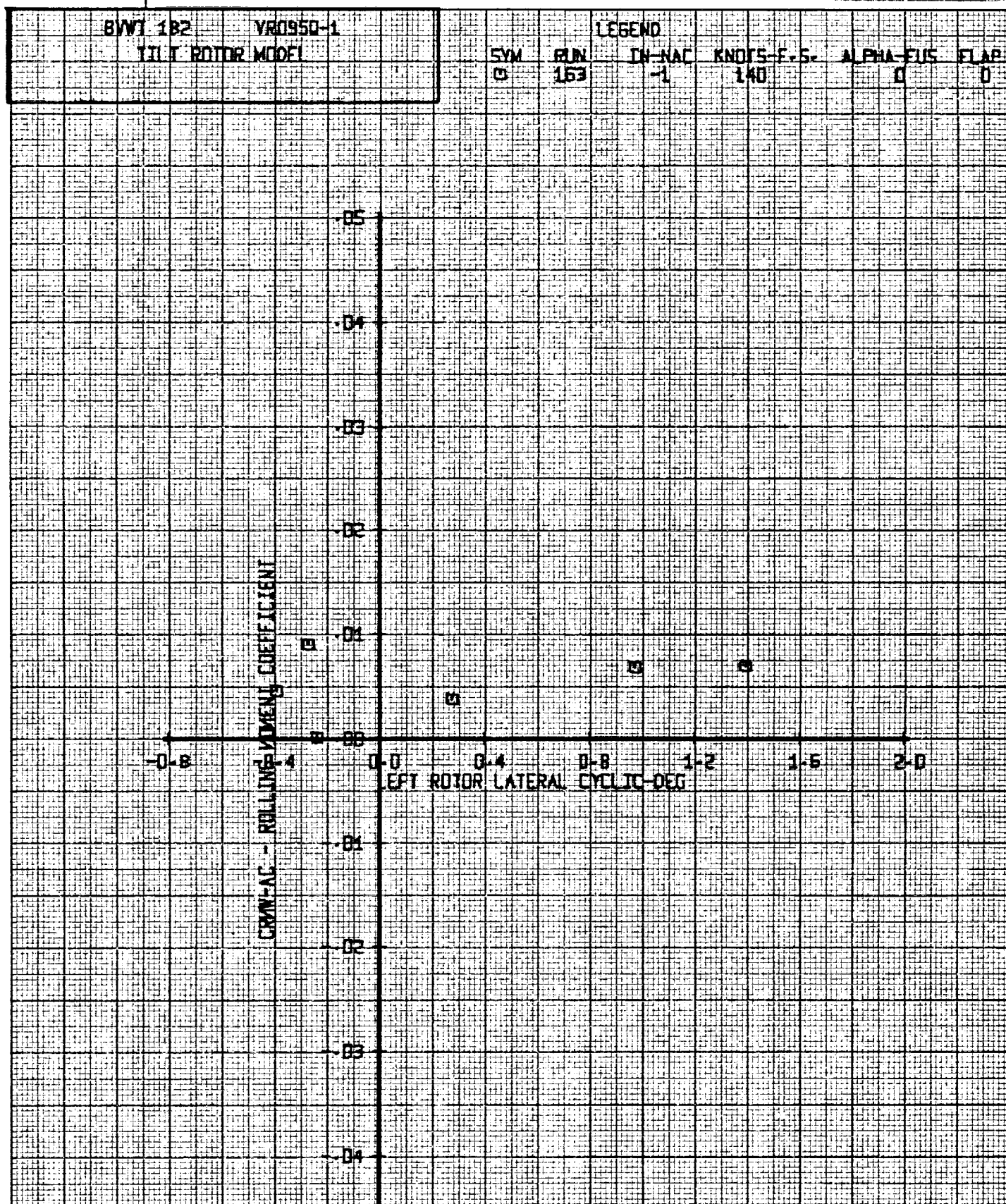


Figure 13-090. Aircraft Rolling Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

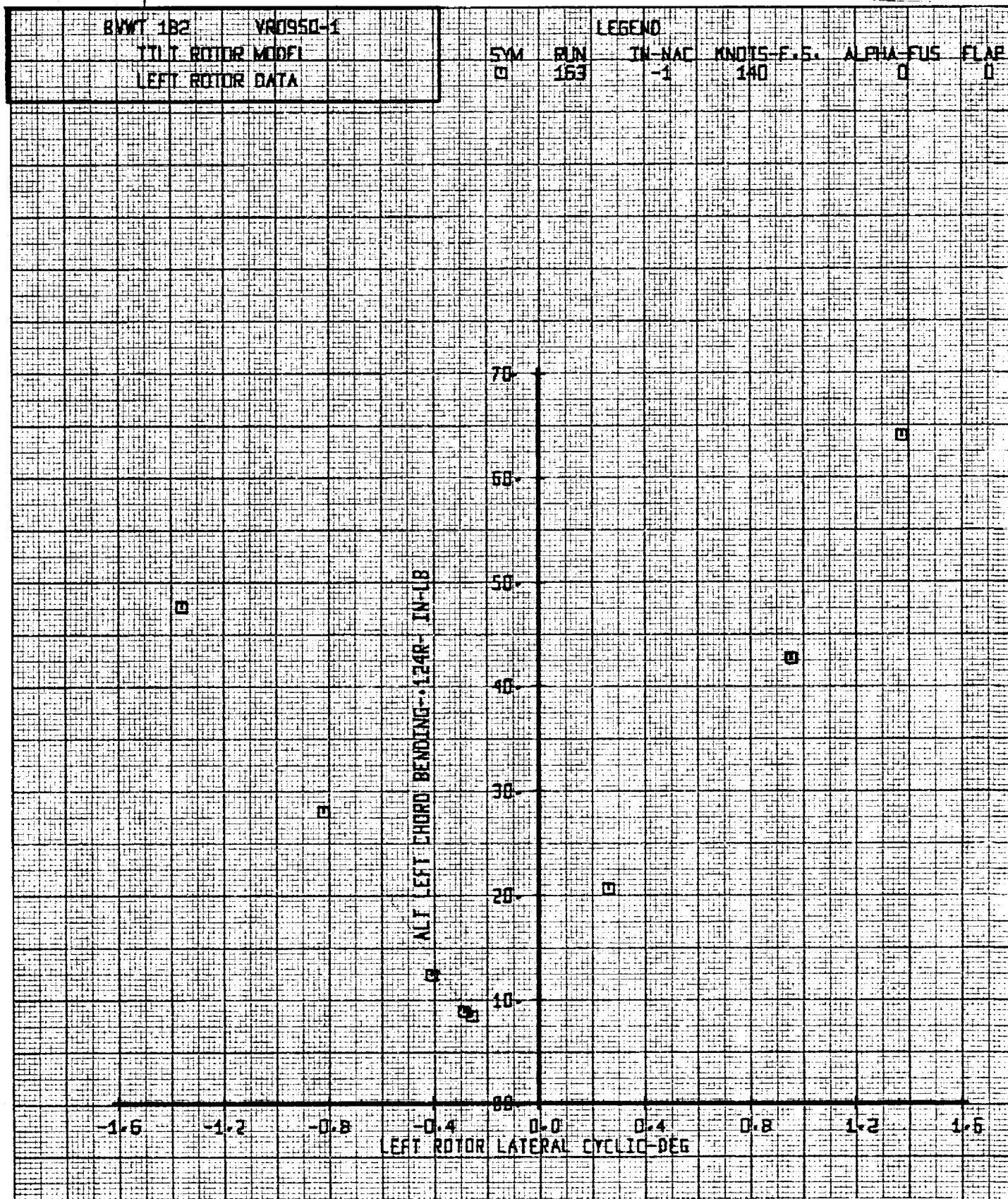


Figure 13-091. Alt. Left Chord Bending Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

BVWT 182 VR1950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-MAC

KNOTS-E.S.

ALPHA-DEG

FLAP

□

153

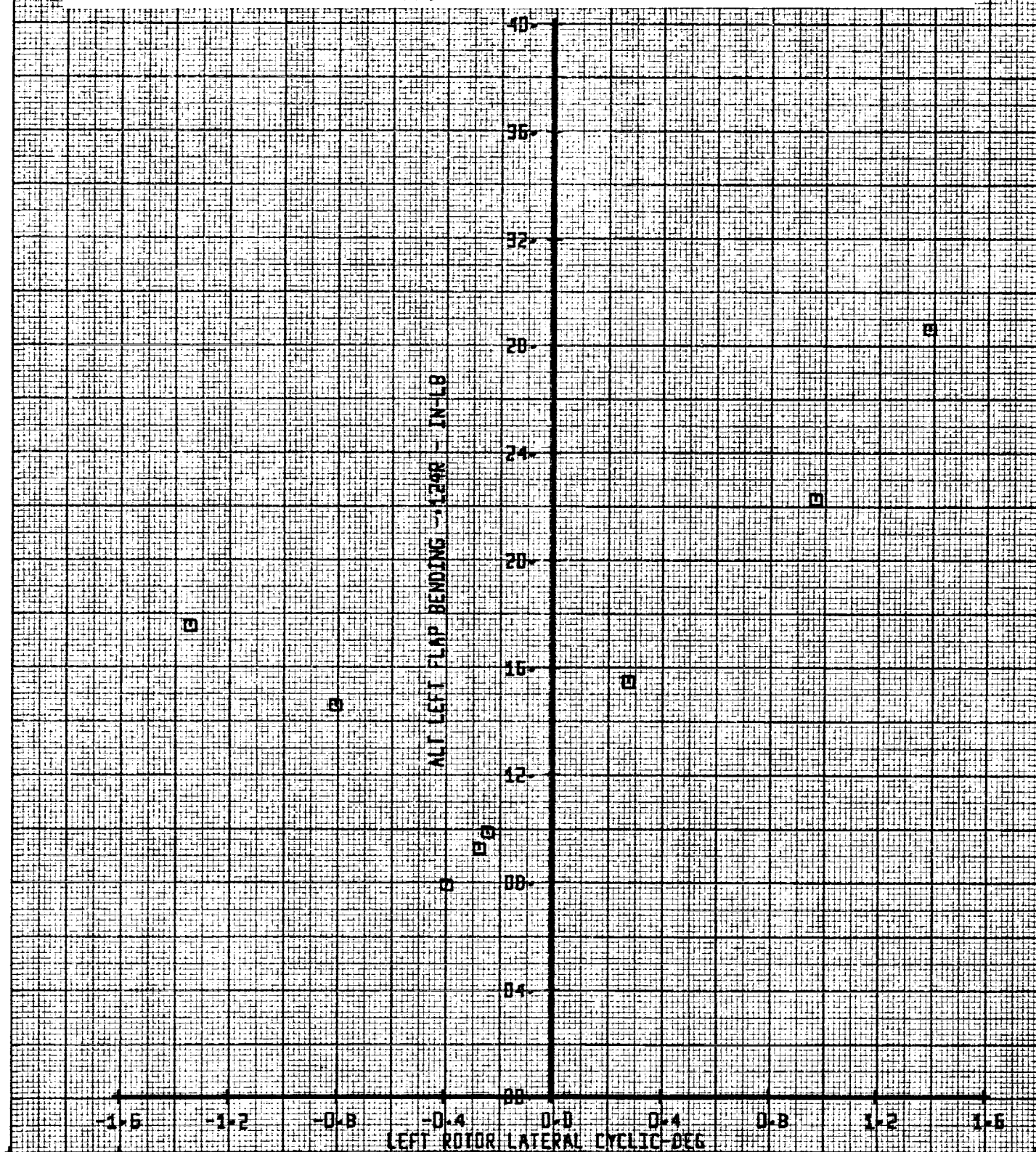
-1

140

□

0

Figure 13-092. Alt. Left Flap Bending Versus Left Rotor Lat.
Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed
140 Knots.



115

SET 112
BVWT 182

BVWT 182 VR0950-1

TILT ROTOR MODEL

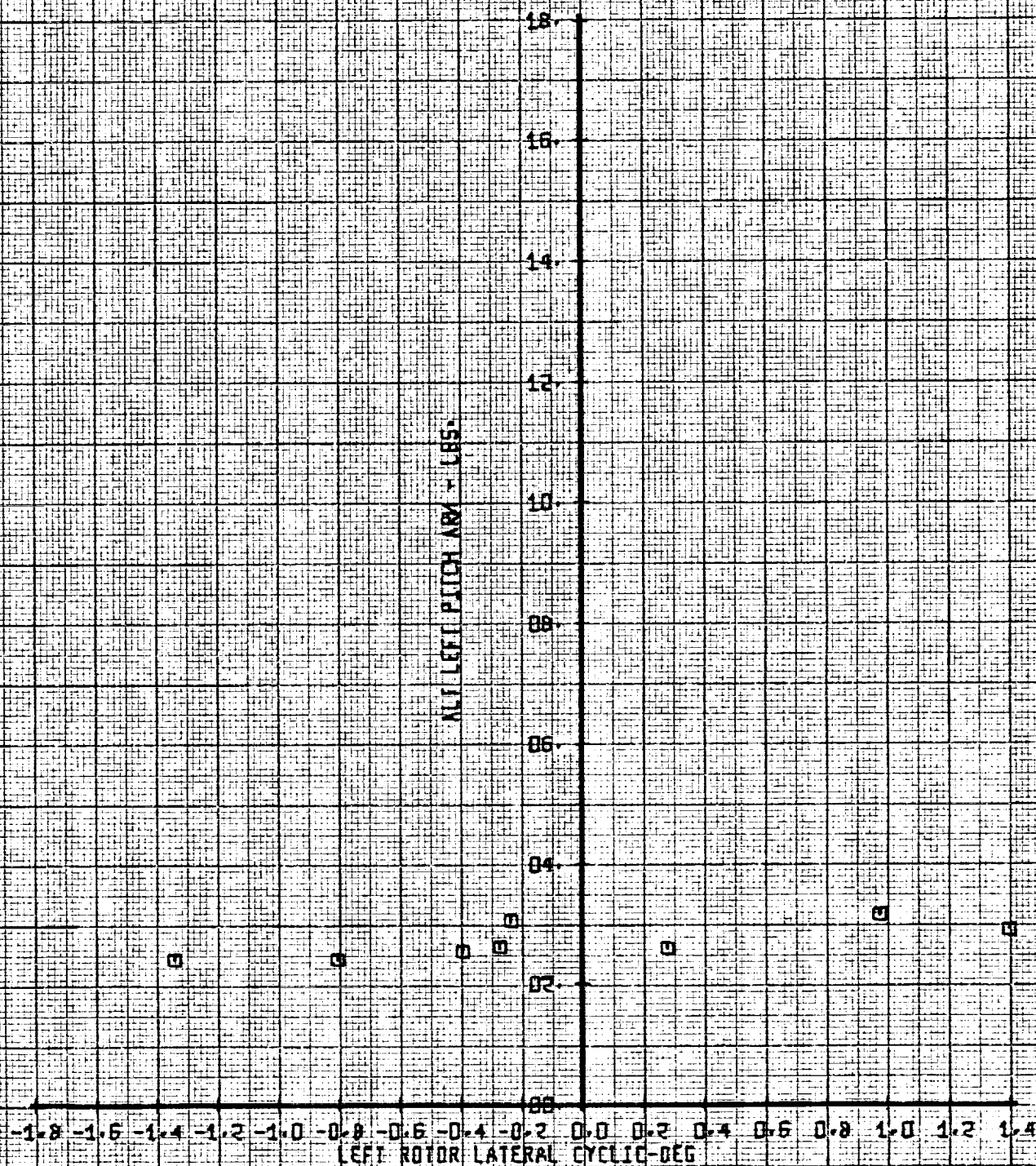
LEFT ROTOR DATA

SYM
□RUN
163

LEGEND

IN-NAC
-1KNOTS-F.S.
140ALPHA-DEG
0FLAP
0

Figure 13-093. Alt. Left Pitch Link Load Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1$ Full Scale Airspeed 140 Knots.



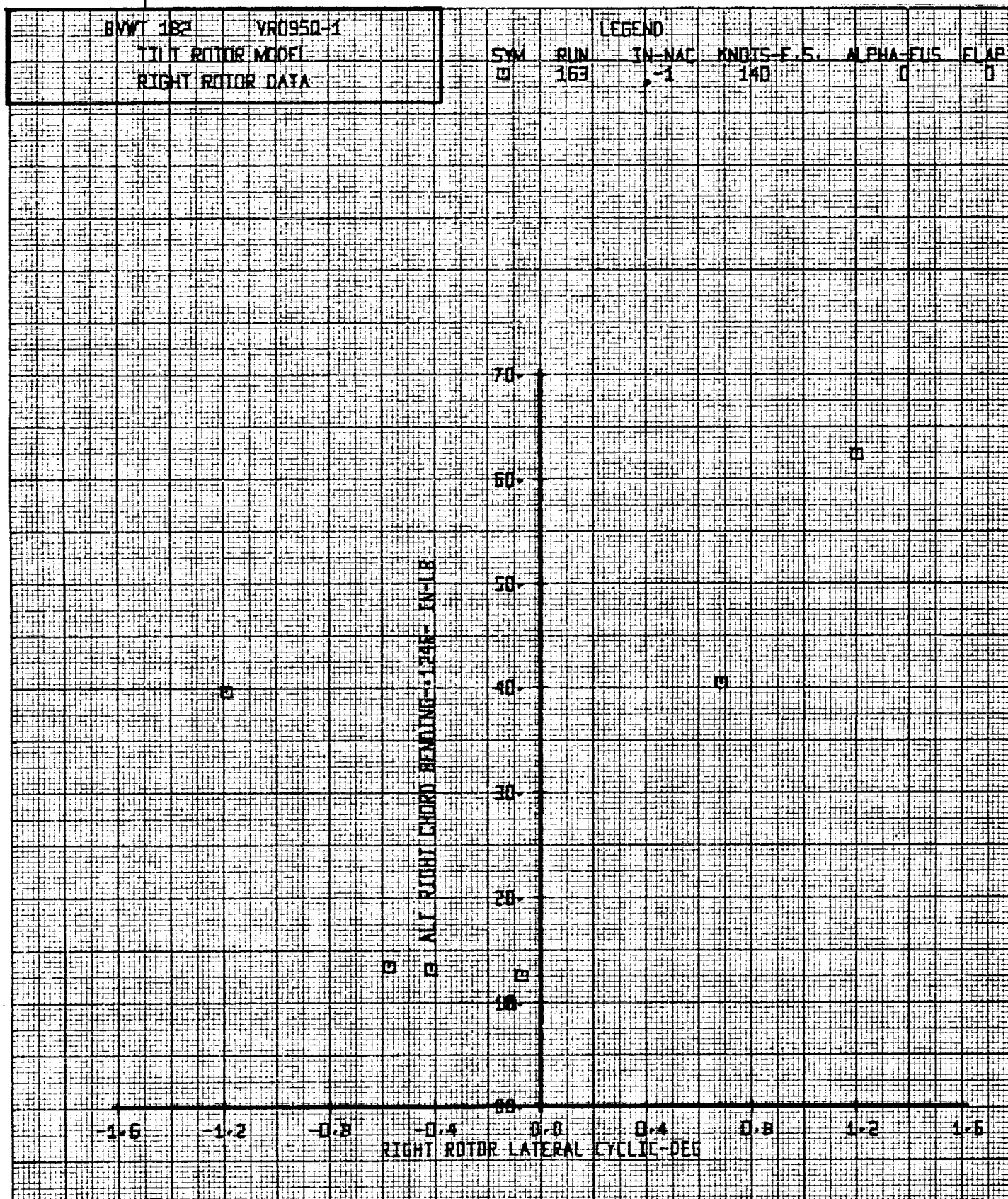
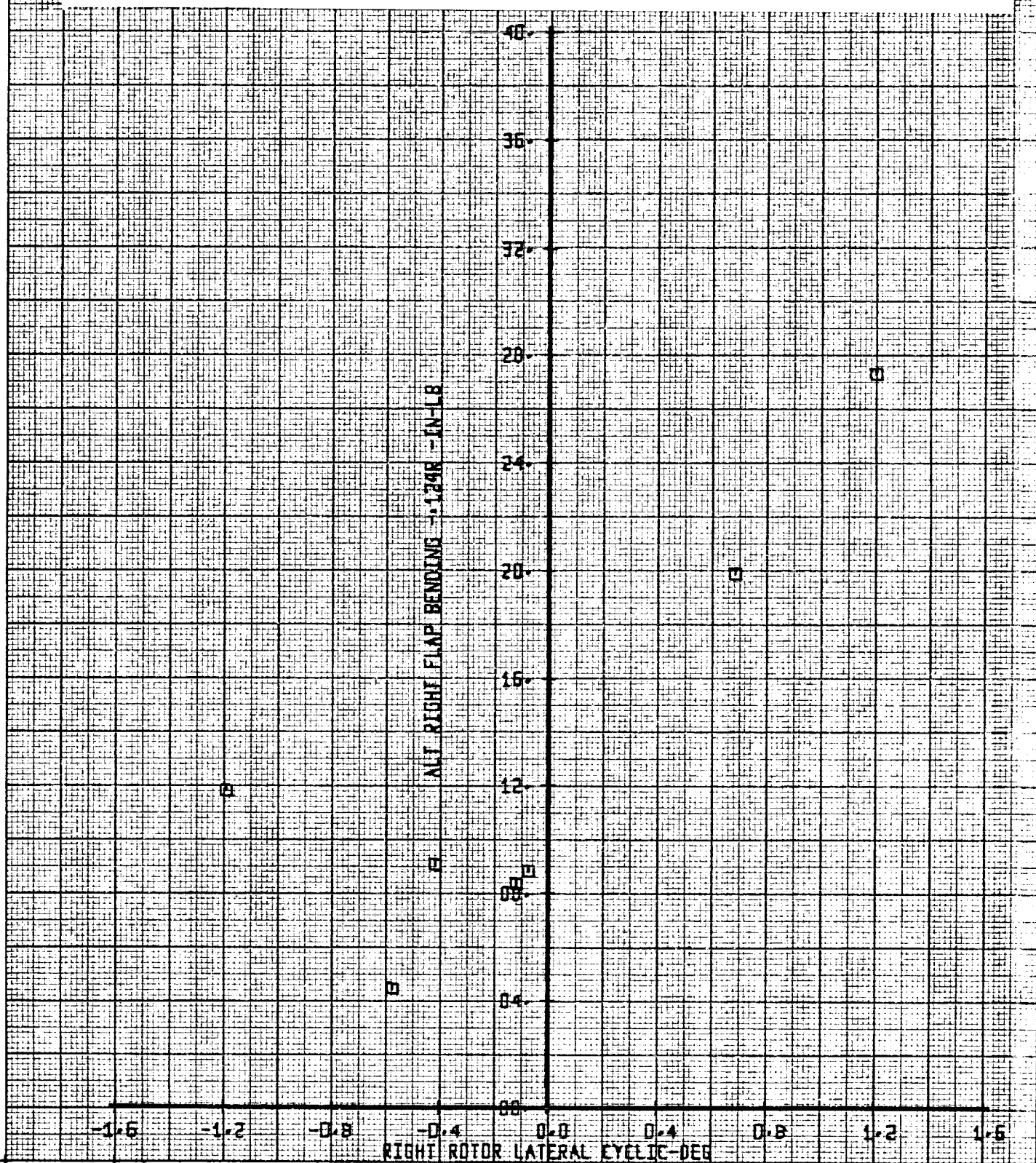


Figure 13-094. Alt. Right Chord Bending Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.

BVWT 182	VR0950-1	LEGEND					
TILT ROTOR MODEL		SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
RIGHT ROTOR DATA		0	163	-1	140	0	0

Figure 13-095. Alt. Right Flap Bending Versus Right Rotor Lat. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 140 Knots.



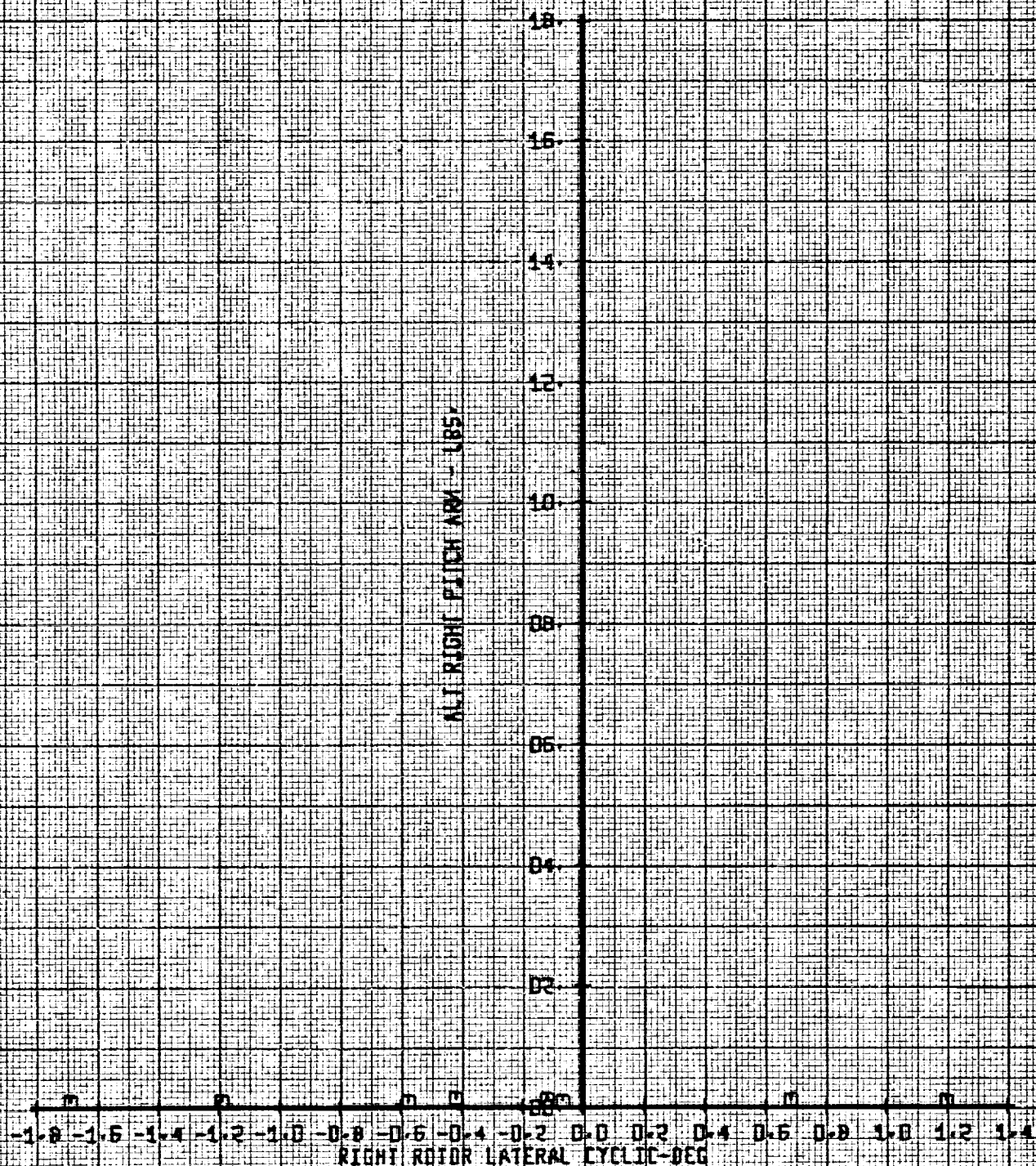
BWVT 182 VR0950-1

TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND

SYM	RM	IN-MAC	KNOTS-F.S.	ALPHA-FUS	FLAP
0	163	-1	140	0	0

Figure 13-096. Alt. Right Pitch Link Load Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 140 Knots.



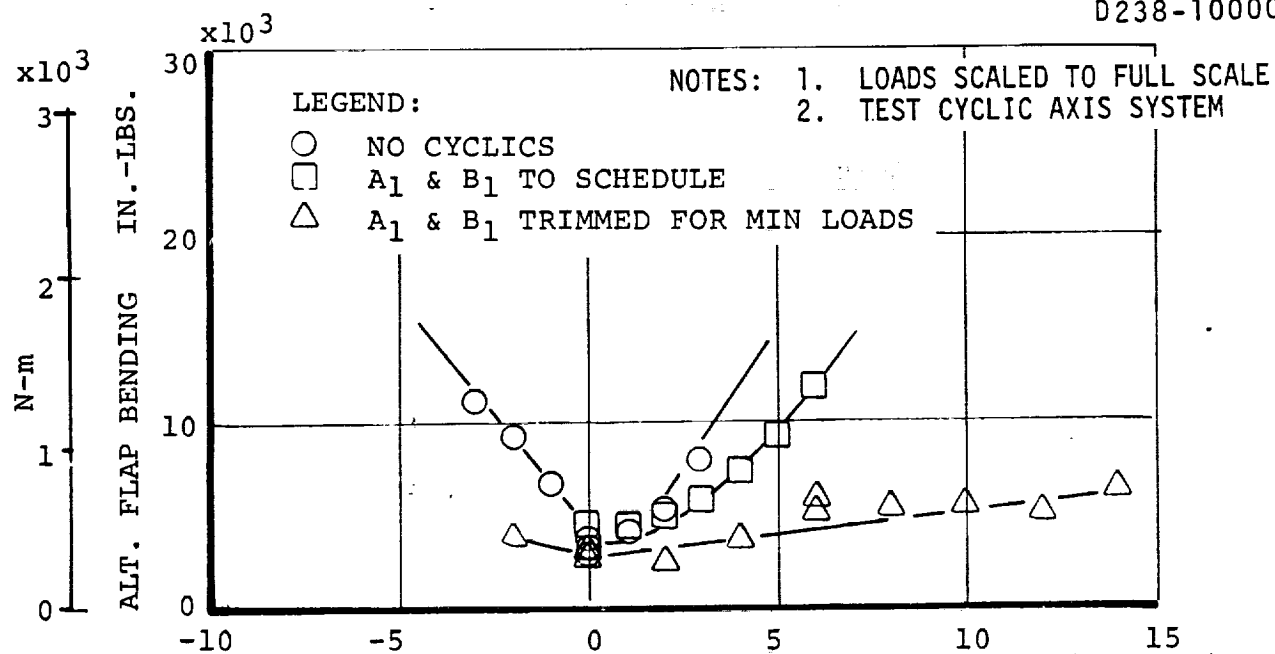


Figure 13-098. Alt. Left Rotor Blade Flap Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$, $V = 140$ Knots.

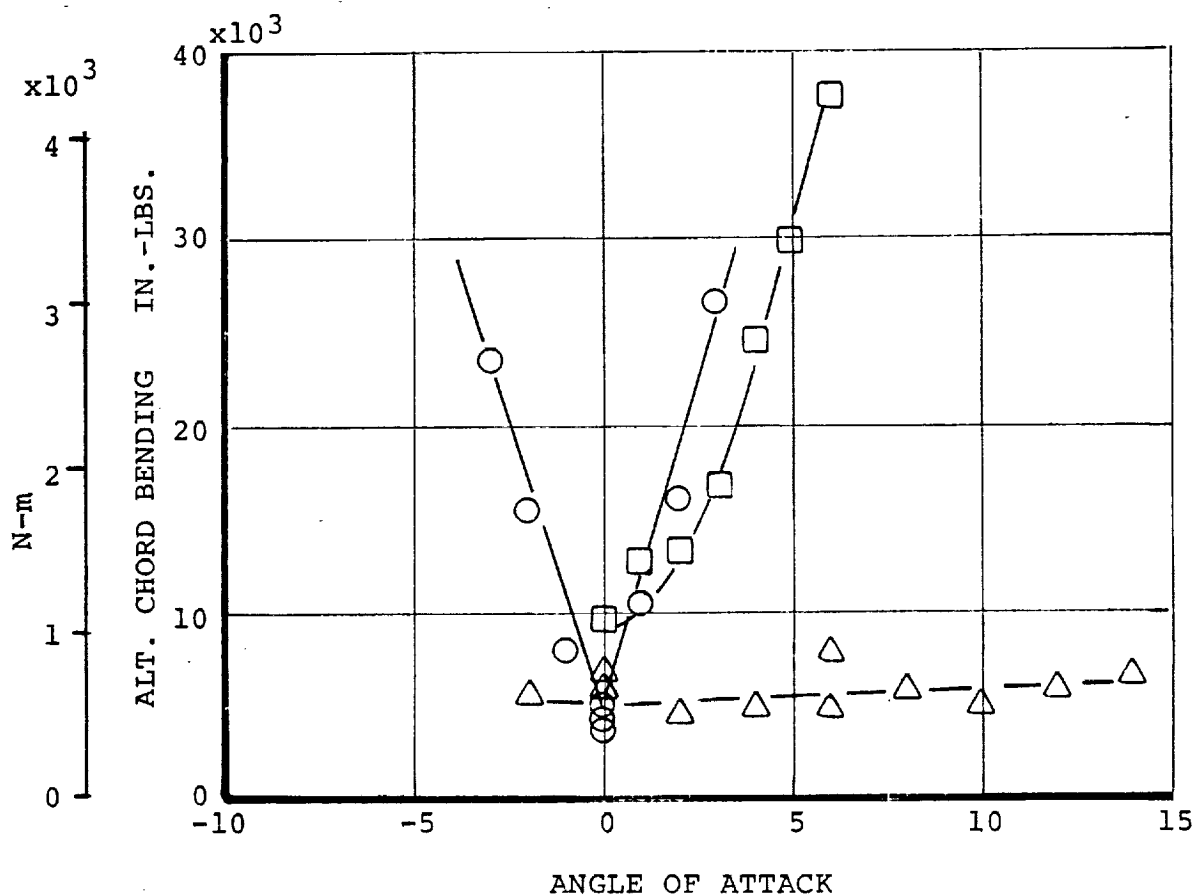
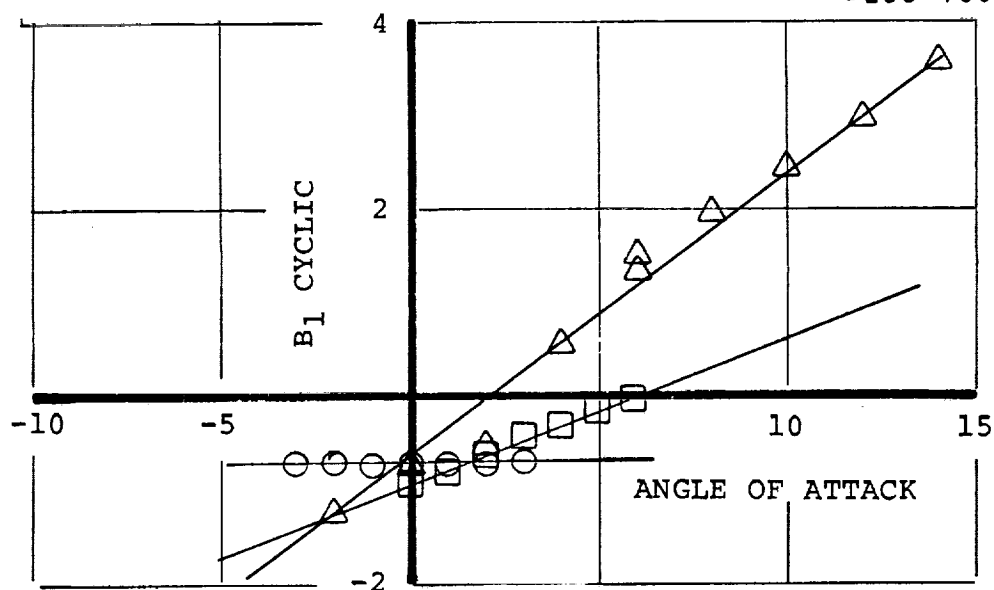


Figure 13-097. Alt. Left Rotor Blade Chord Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$, $V = 140$ Knots.



LEGEND:

- NO CYCLIC
- A_1 & B_1 TO SCHEDULE
- △ A_1 & B_1 TRIMMED FOR MIN LOADS

NOTES: 1. LOADS SCALED TO FULL SCALE
2. TEST CYCLIC AXIS SYSTEM

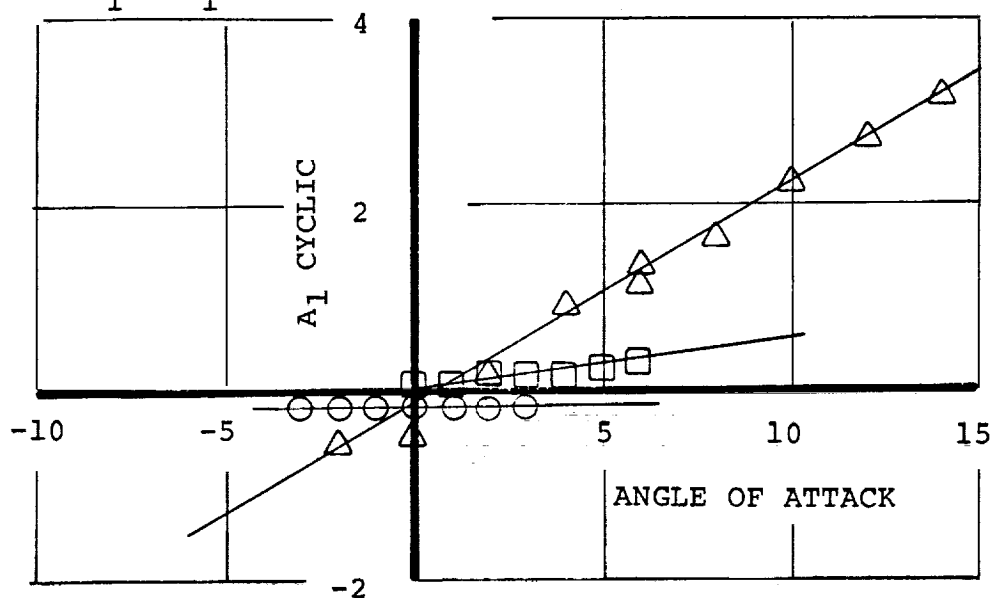


Figure 13-099. Left Rotor Cyclic Schedules. $I_N = -1^\circ$, $V = 140$ Knots.

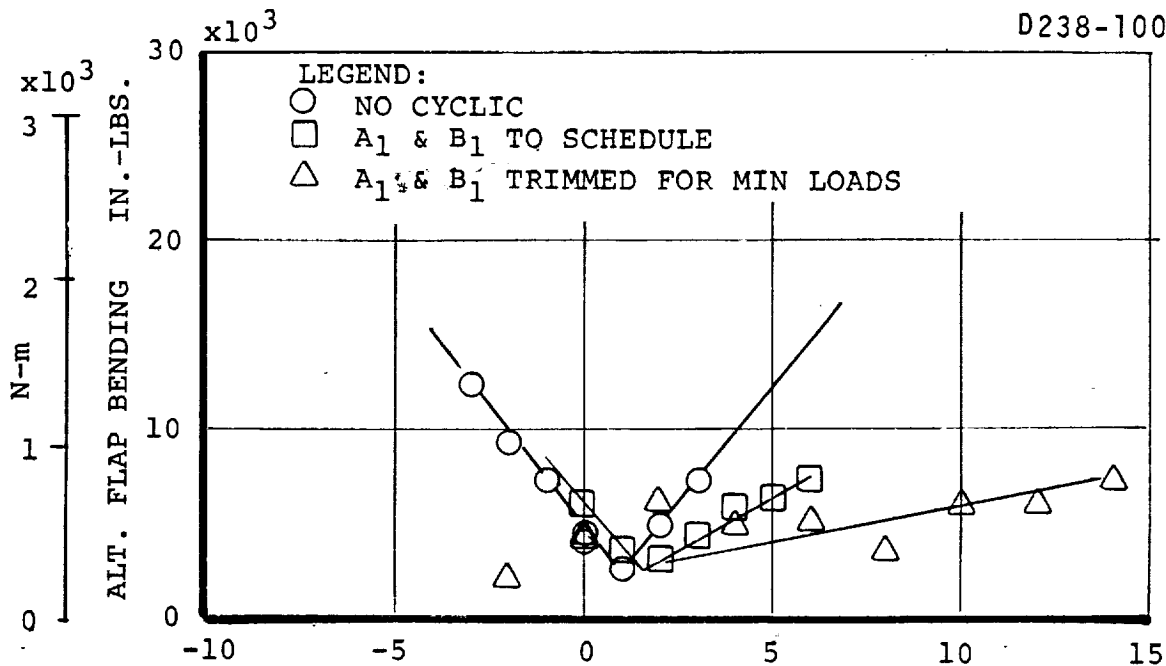


Figure 13-101. Alt. Right Rotor Blade Flap Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$, $V = 140$ Knots.

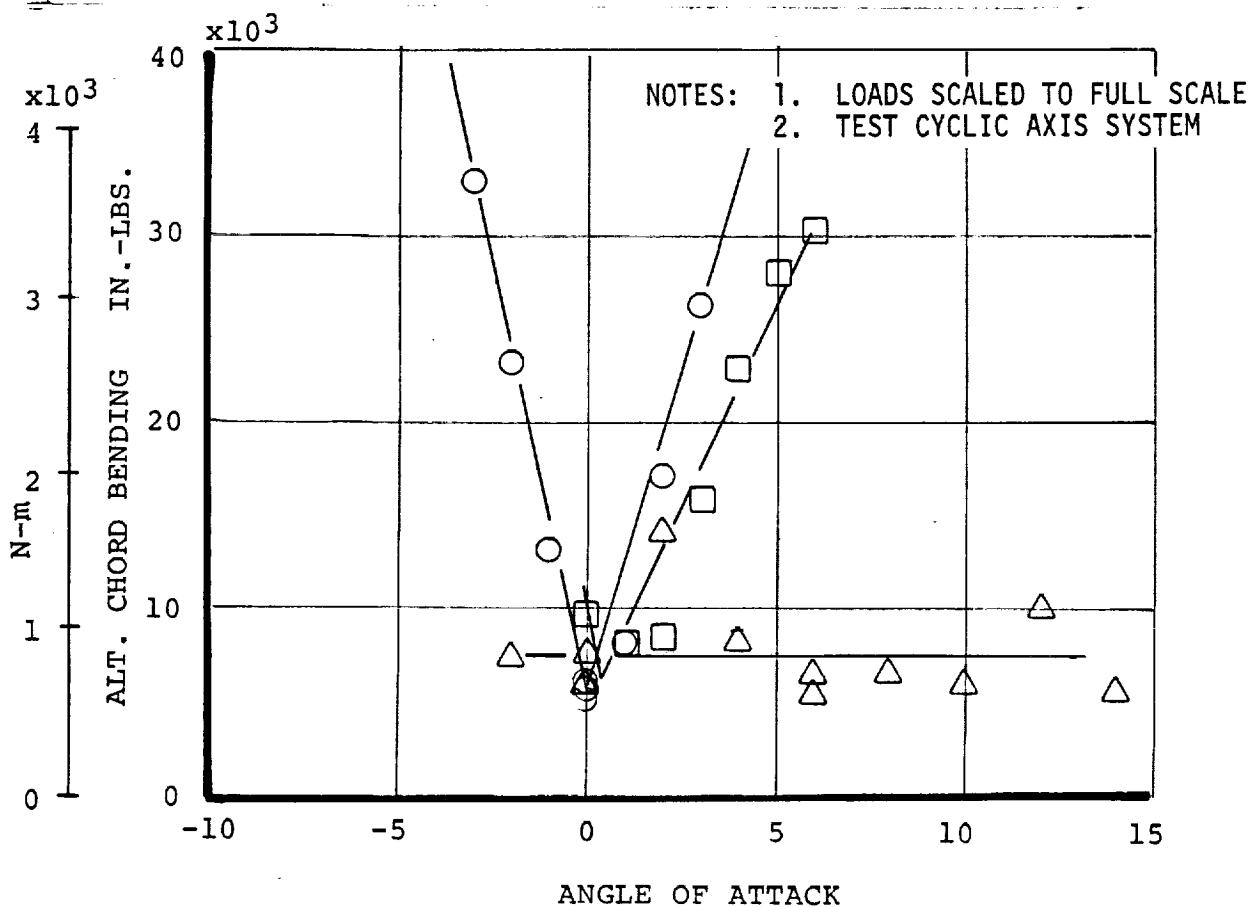
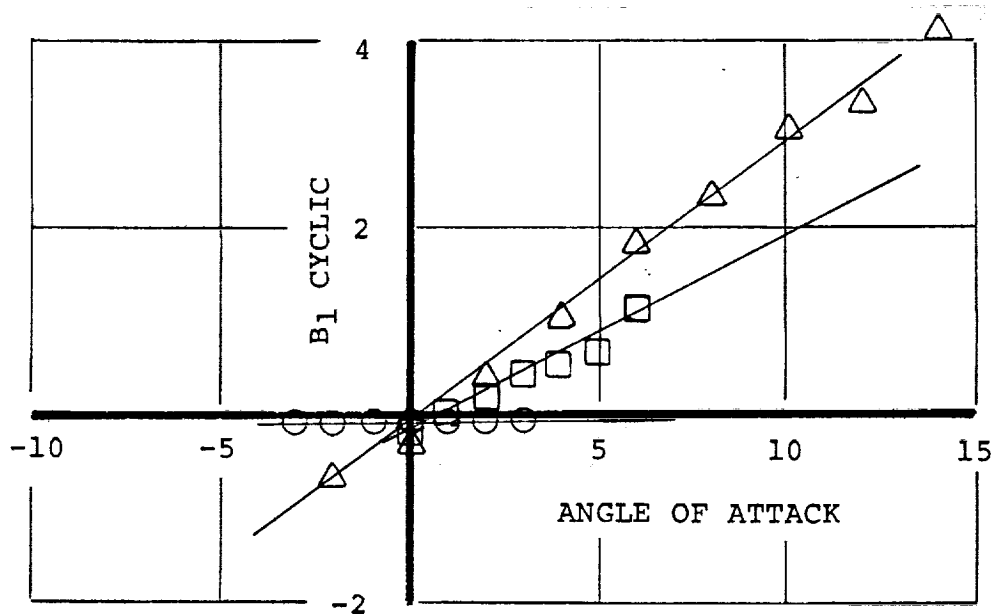


Figure 13-100. Alt. Right Rotor Blade Chord Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$, $V = 140$ Knots.



LEGEND:

○ NO CYCLIC

□ A_1 & B_1 TO SCHEDULE△ A_1 & B_1 TRIMMED FOR MIN LOADS

NOTES: 1. LOADS SCALED TO FULL SCALE
2. TEST CYCLIC AXIS SYSTEM

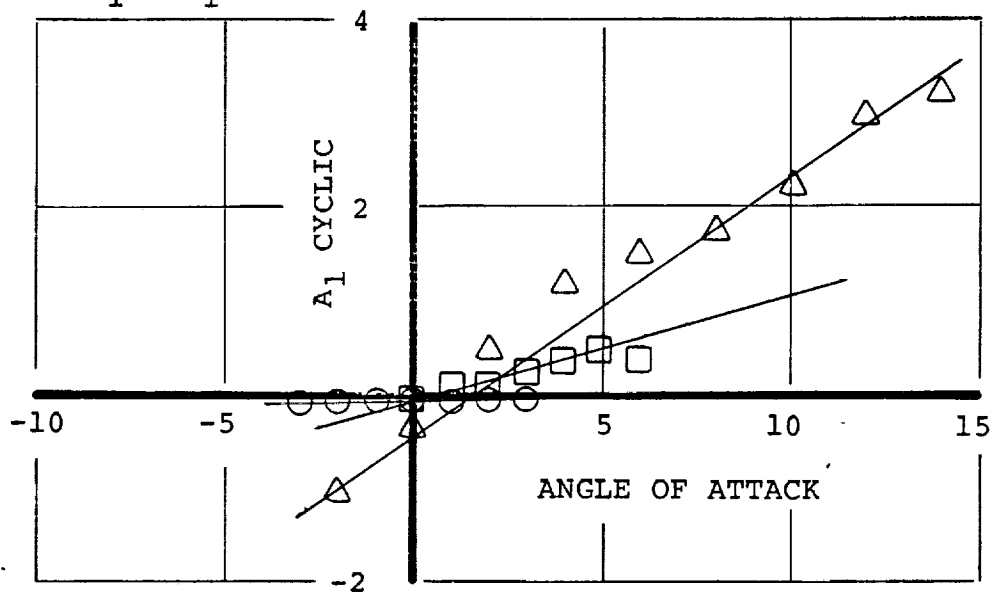


Figure 13-102 Right Rotor Cyclic Schedules. $I_N = -1^\circ$, $V = 140$ Knots.

$$I_H = -10 \text{ V}_{FS} = 180 \text{ KTS.}$$

BVWT 182 YR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

SYM

RUN

LEGEND

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

SYM

RUN

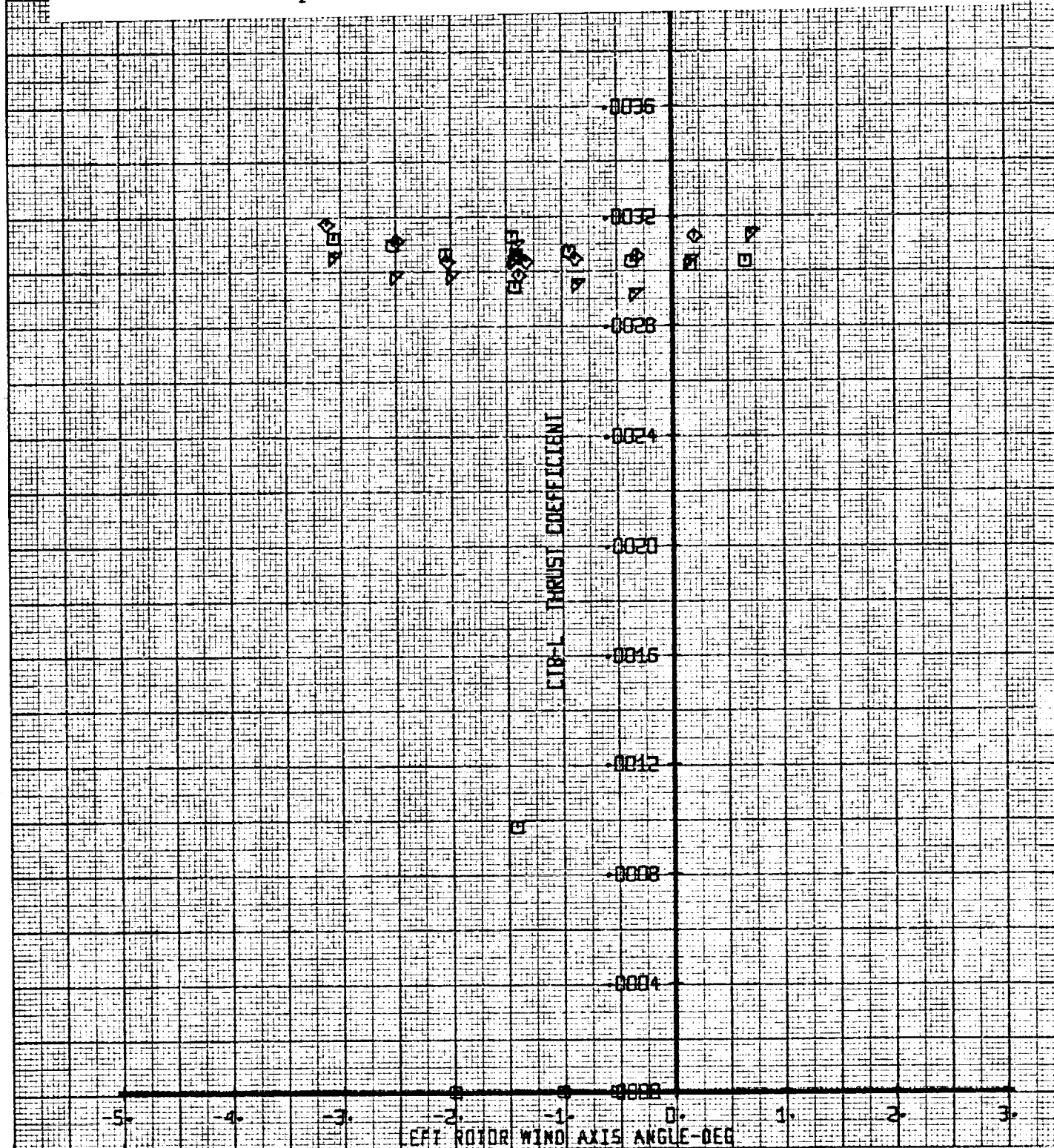
IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

Figure 14-001. Left Rotor Thrust Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$



BVWT 182 VR0950-1

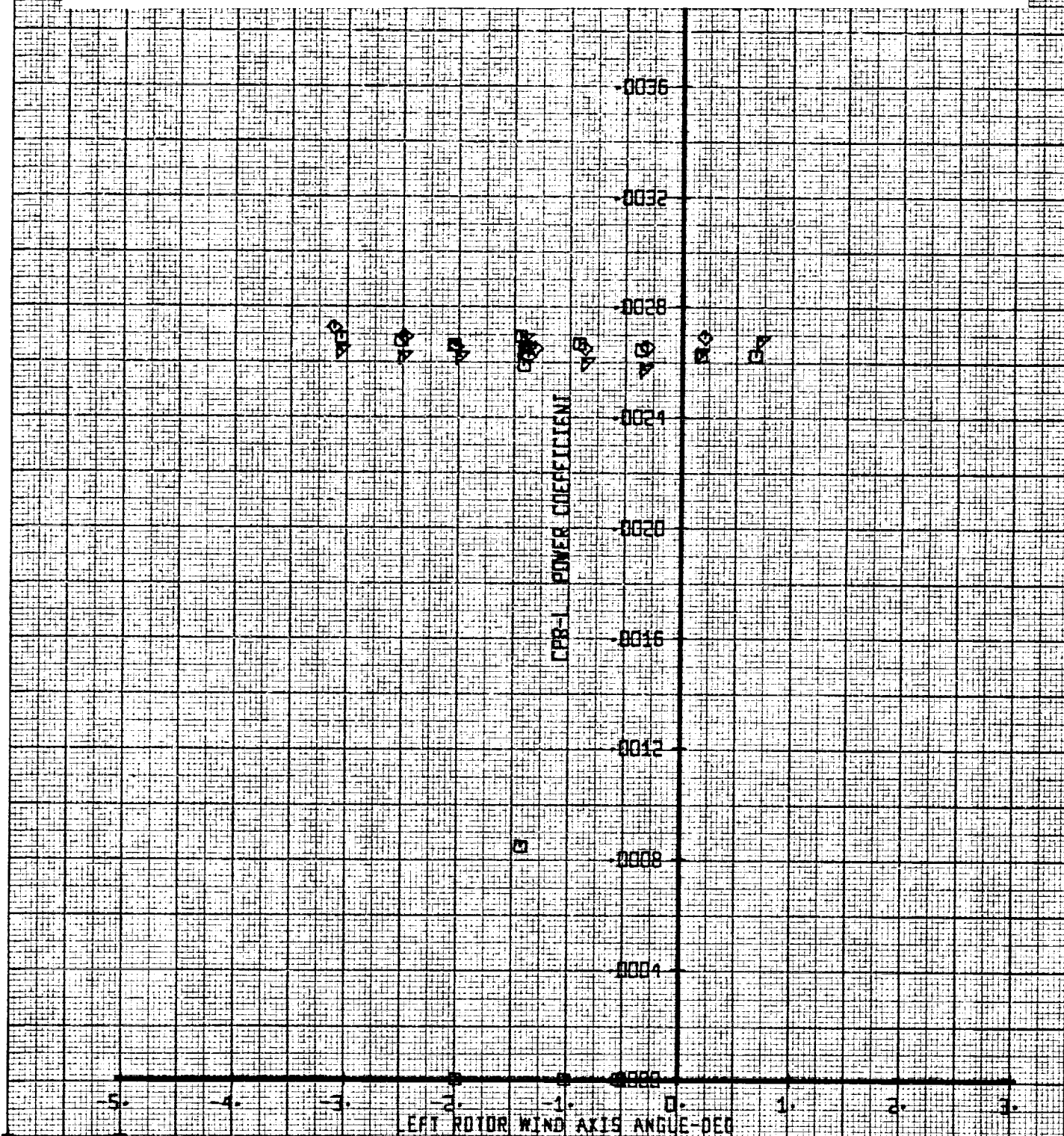
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FLS	FLAP
□	128	-1	180	VARY	0
◊	129	-1	180	VARY	10
◇	131	-1	180	VARY	20

Figure 14-002. Left Rotor Power Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.
 $\delta F = 0, 10^\circ, 20^\circ$



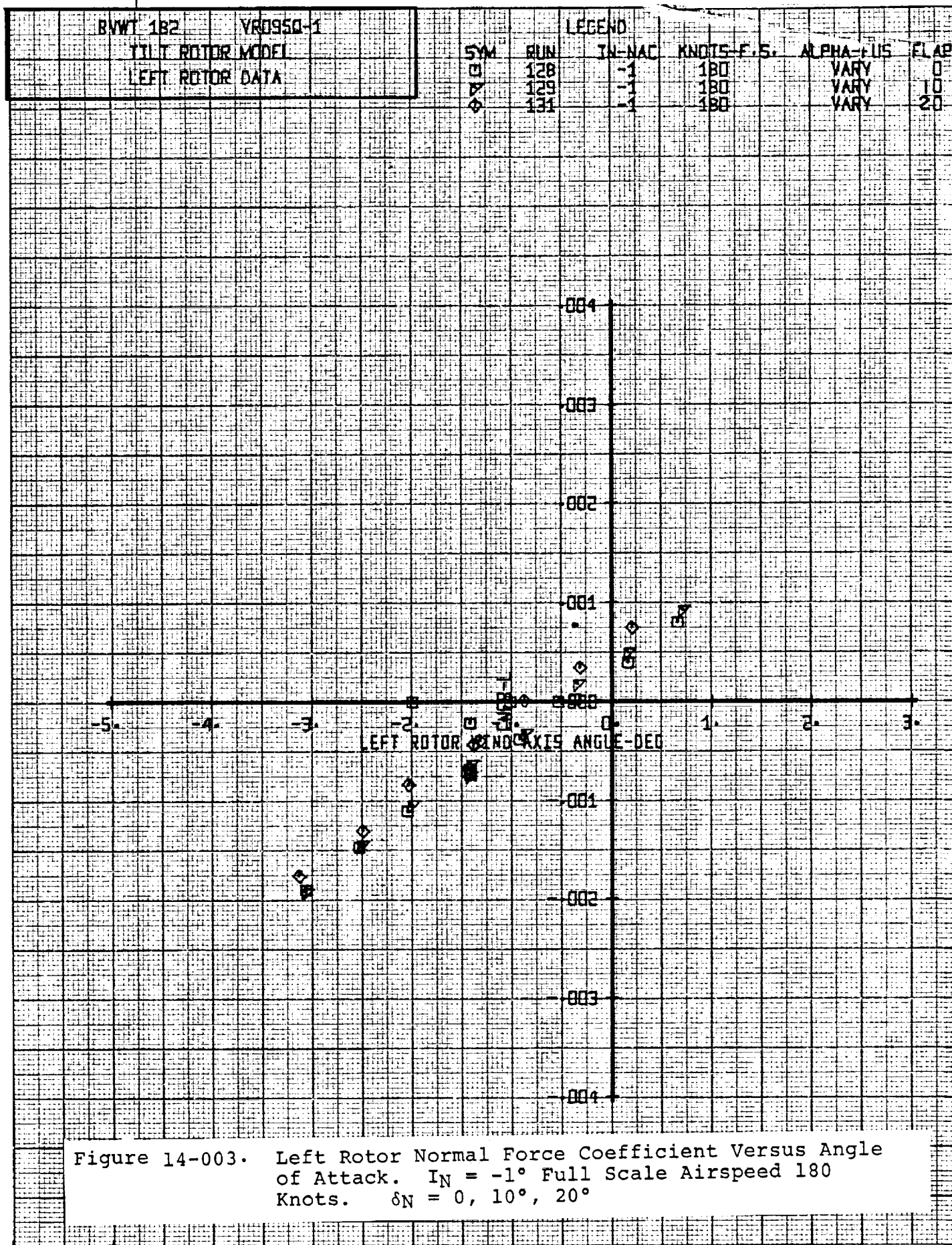
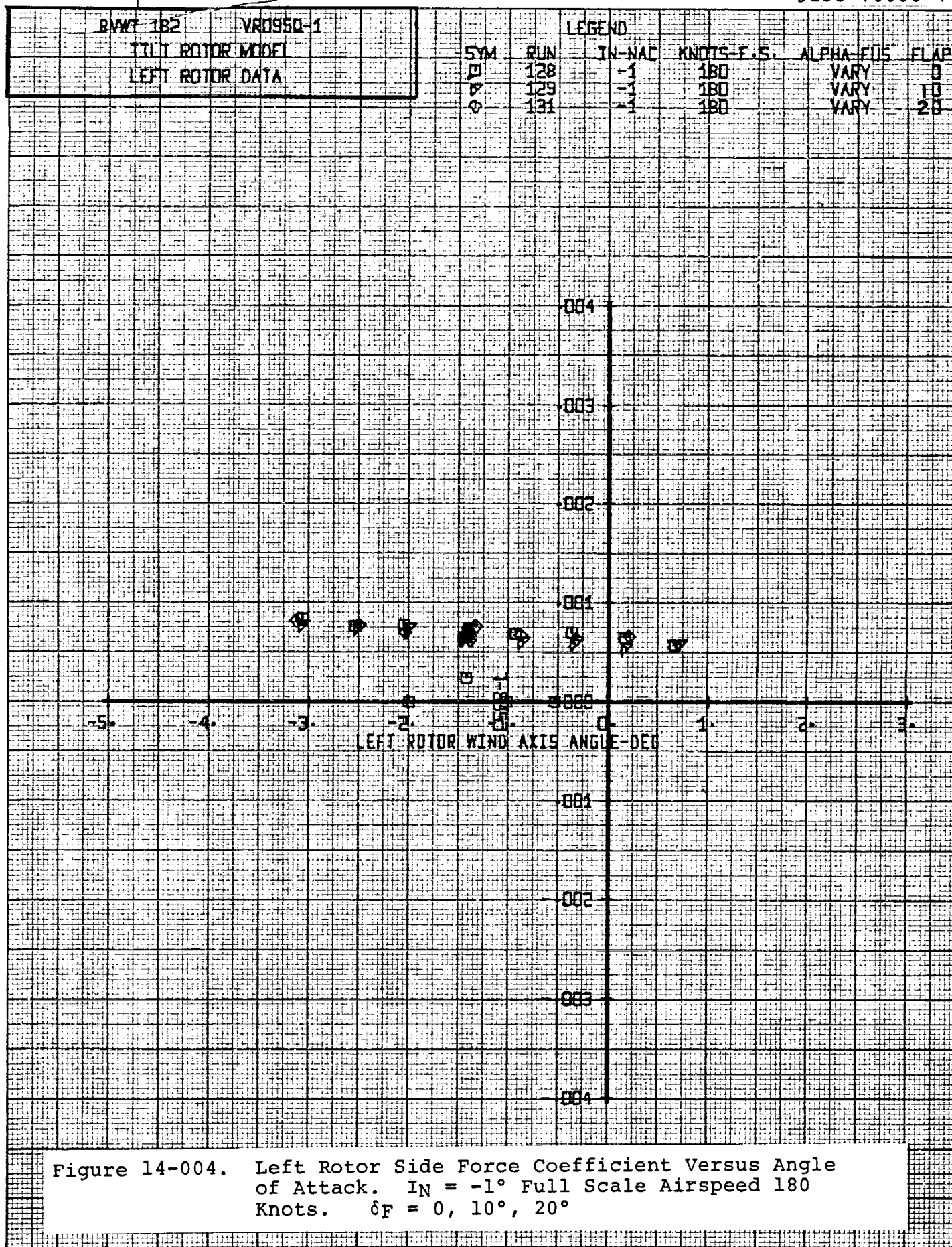
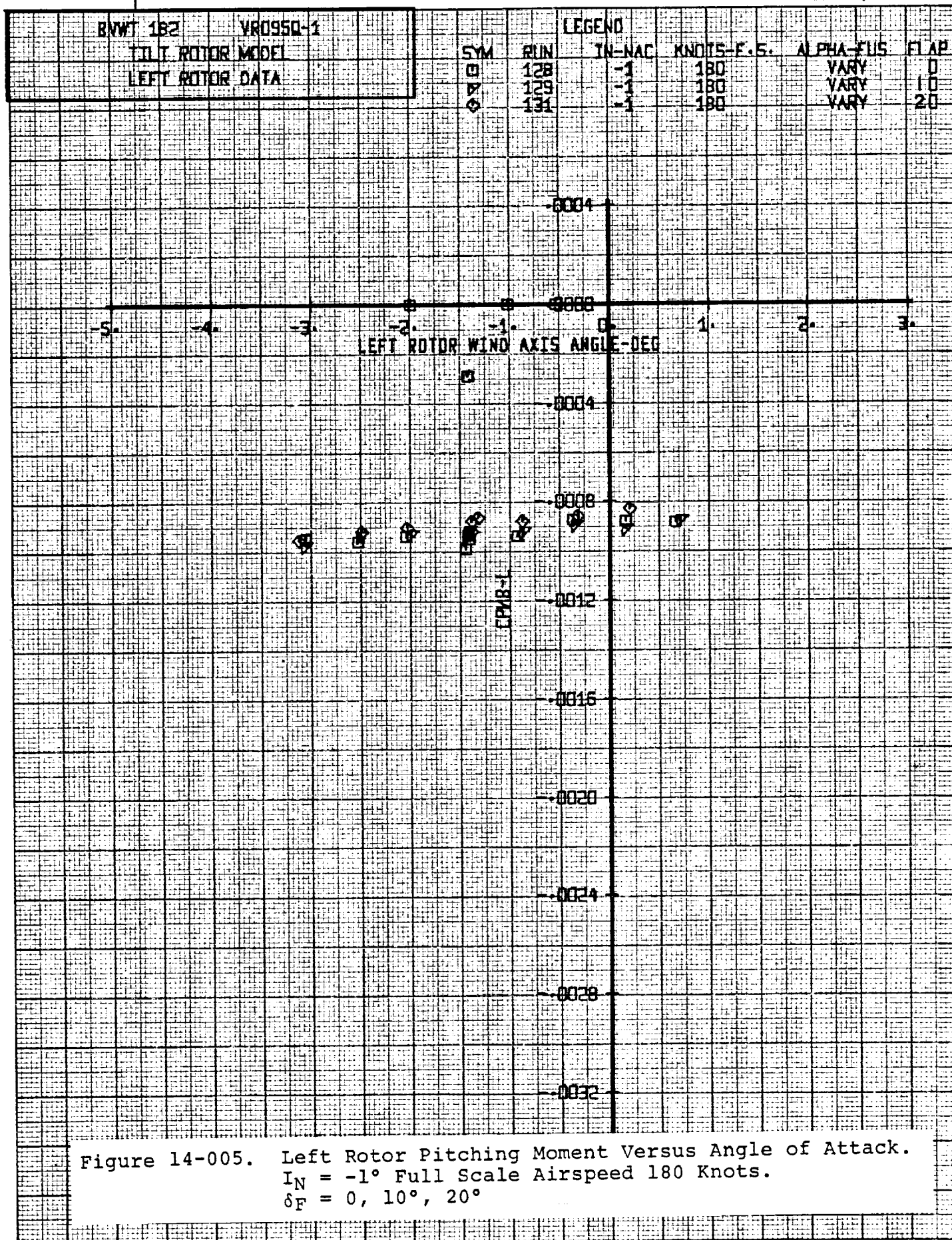


Figure 14-003. Left Rotor Normal Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots. $\delta_N = 0, 10^\circ, 20^\circ$





BVWT 182 VR0950-1

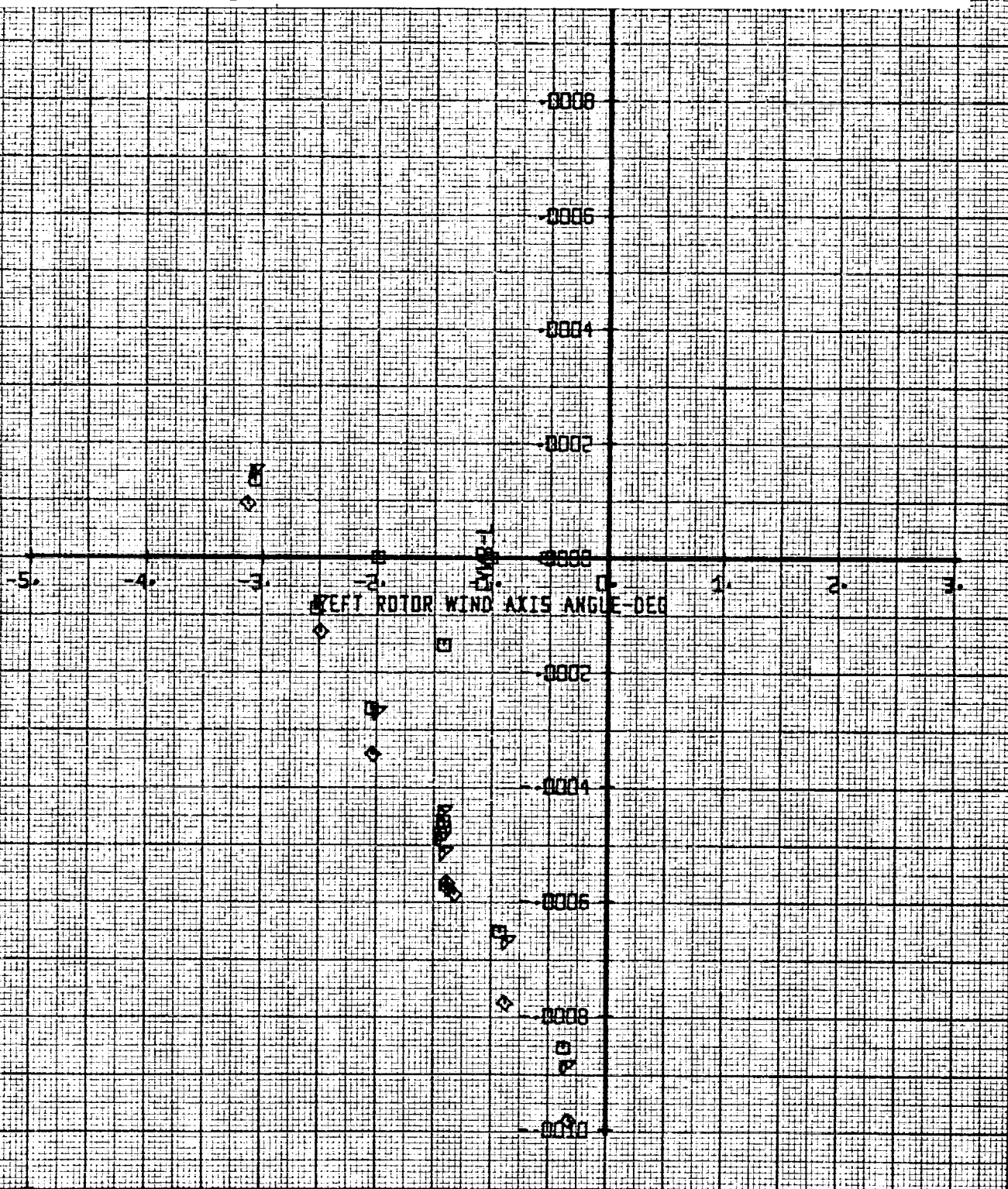
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	128	-1	180	VARY	0
▽	129	-1	180	VARY	10
◇	131	-1	180	VARY	20

Figure 14-006. Left Rotor Yawing Moment Versus Angle of Attack.

 $I_N = -1^\circ$ Full Scale Airspeed 180 Knots. $\delta_F = 0, 10^\circ, 20^\circ$ 

BNWT 182	VR0950-1
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TILT RETOR MODE

RIGHT RETOR DATA

LEGEND

FIN

IN-NAC

KNOTT, F. S.

ALPHA-FLU

ELAP

3

128

三

180
180

VARY
VARY

11

●

131

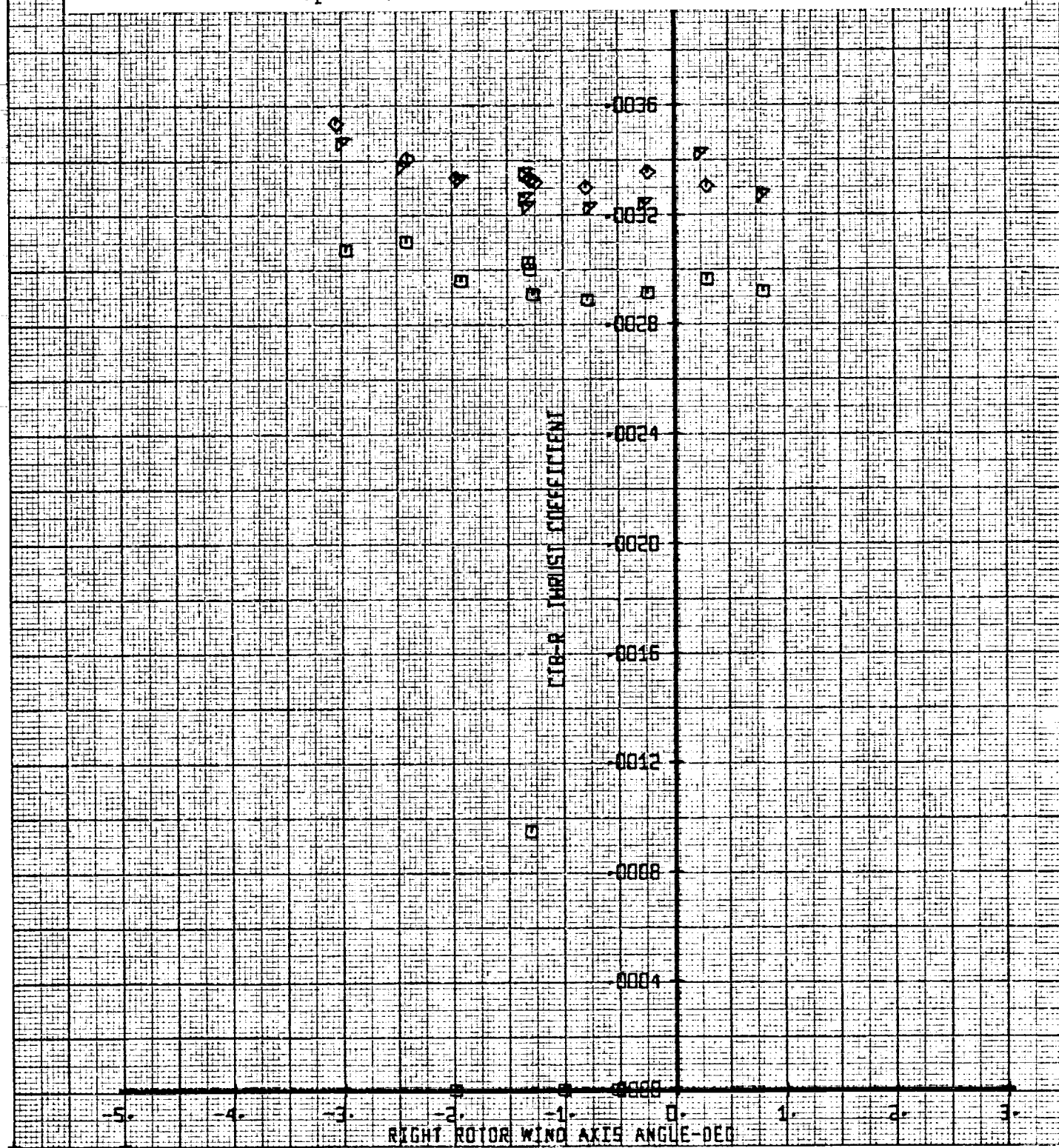
2

180
181

WAVE
VARY

20

Figure 14-007. Right Rotor Thrust Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots. $\delta_F = 0, 10^\circ, 20^\circ$



BWWT 182 VR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

ELIN

IN-NAC

KNDT5-F.5.

ALPHA-FUS

FLAP

128

1

180

VARY-



129
131

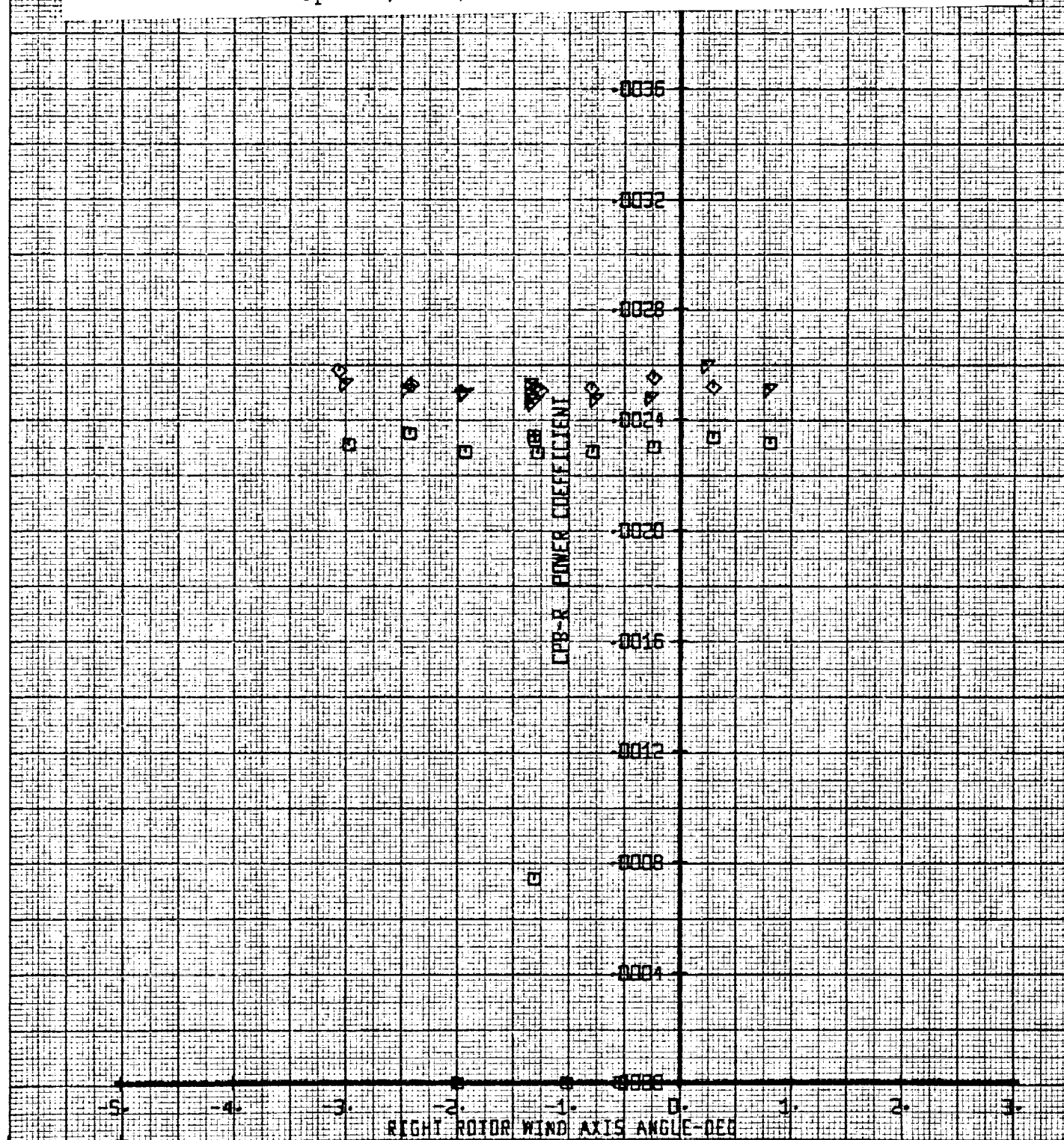
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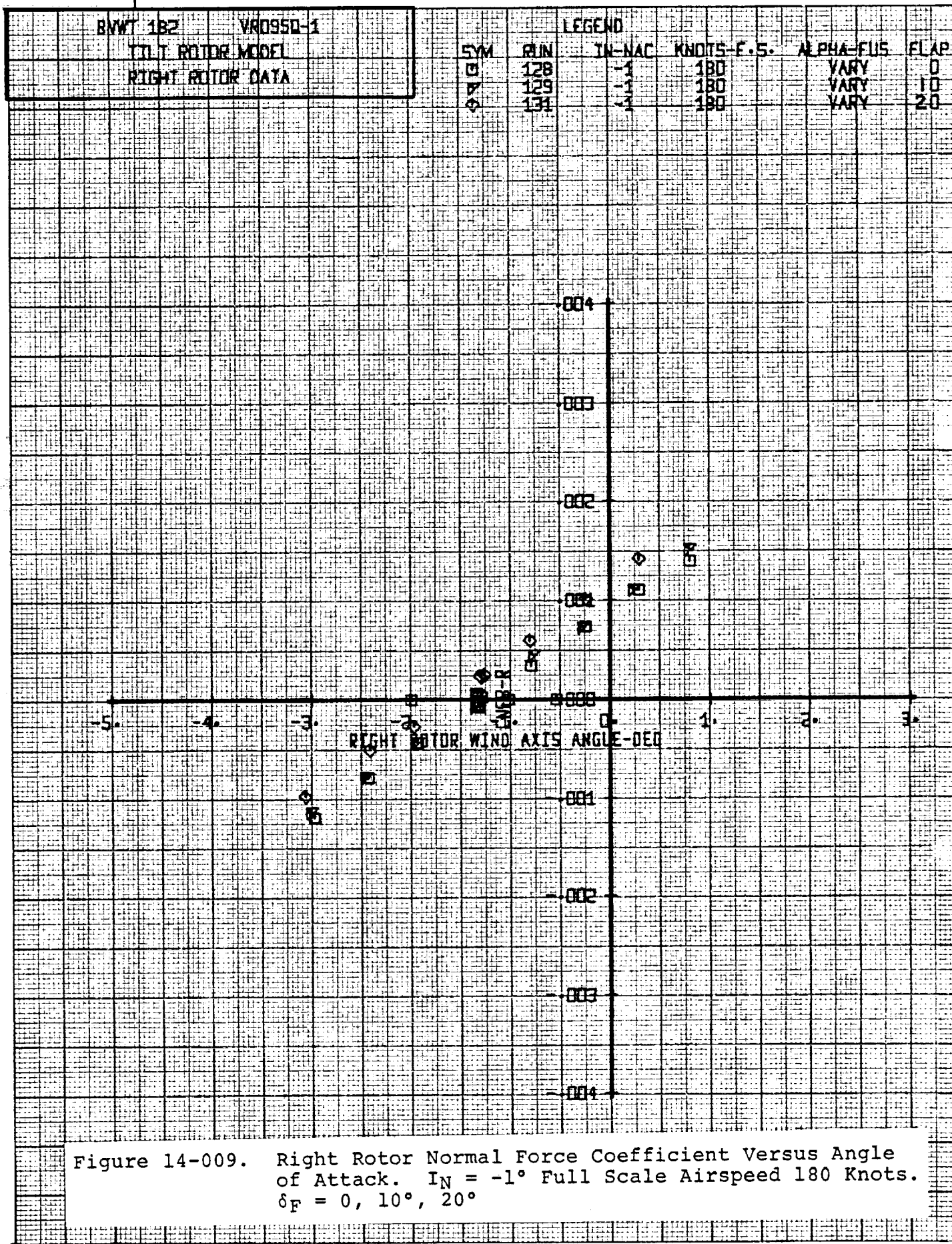
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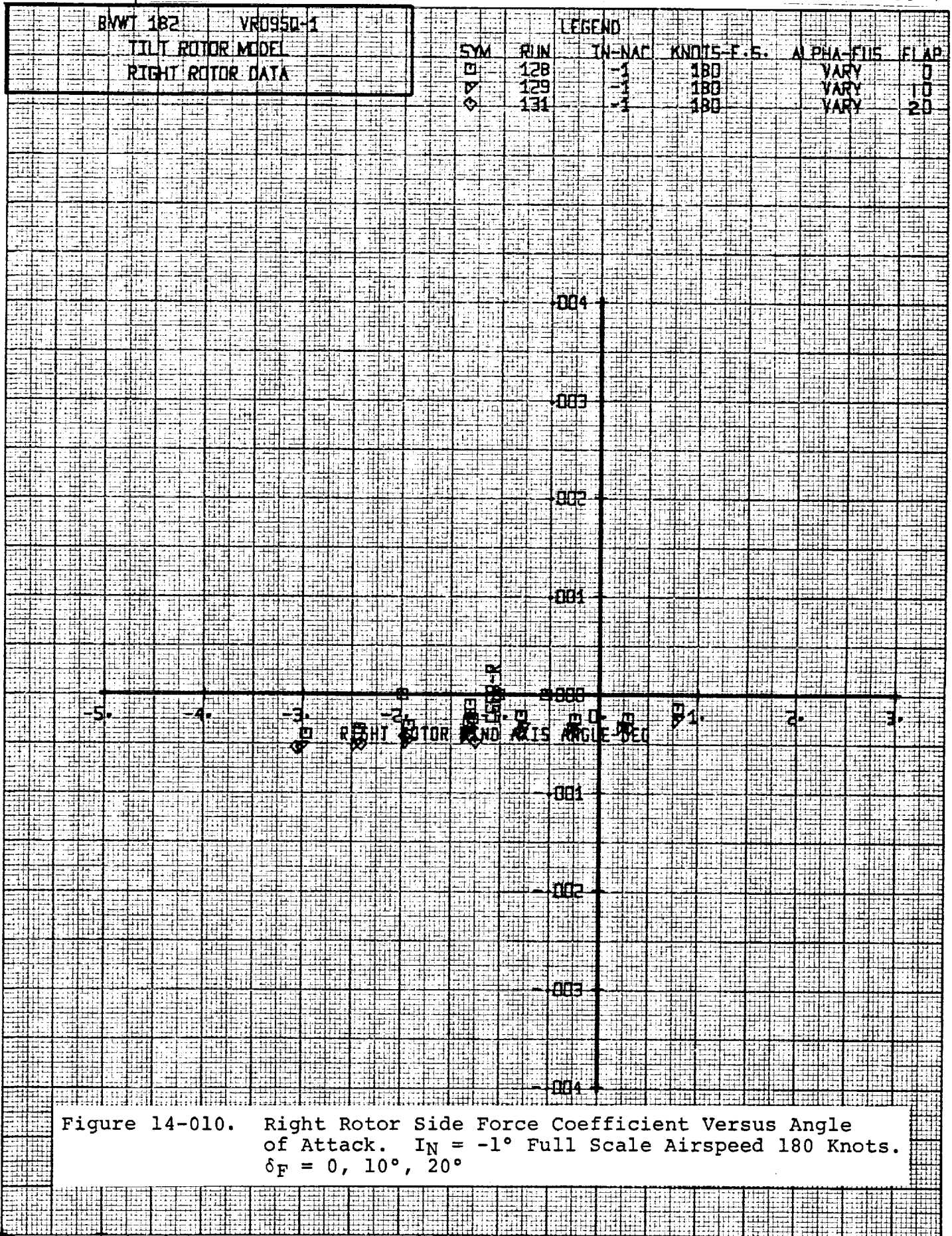
VARY
ADVA

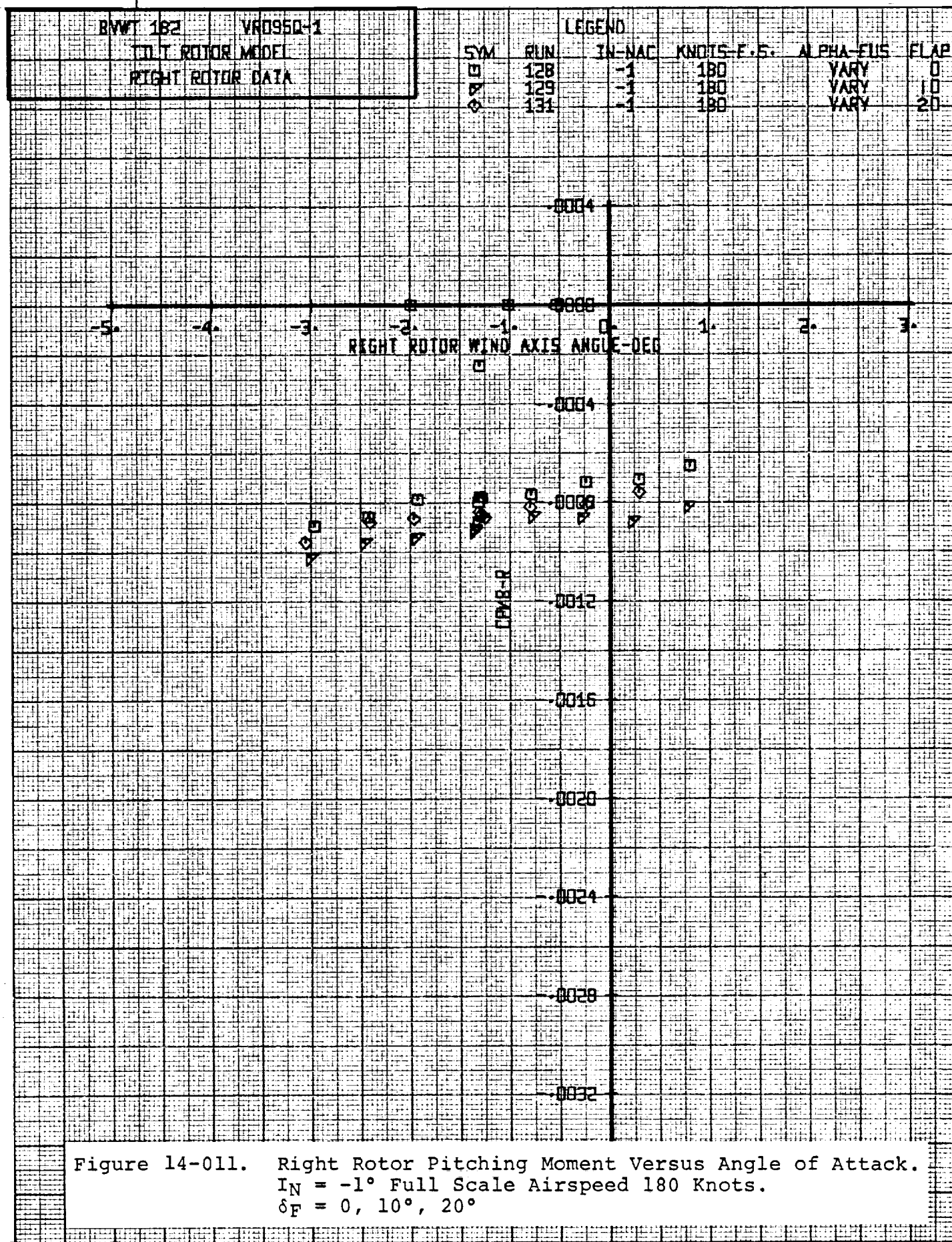
10
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Figure 14-008. Right Rotor Power Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots. $\delta_F = 0, 10^\circ, 20^\circ$









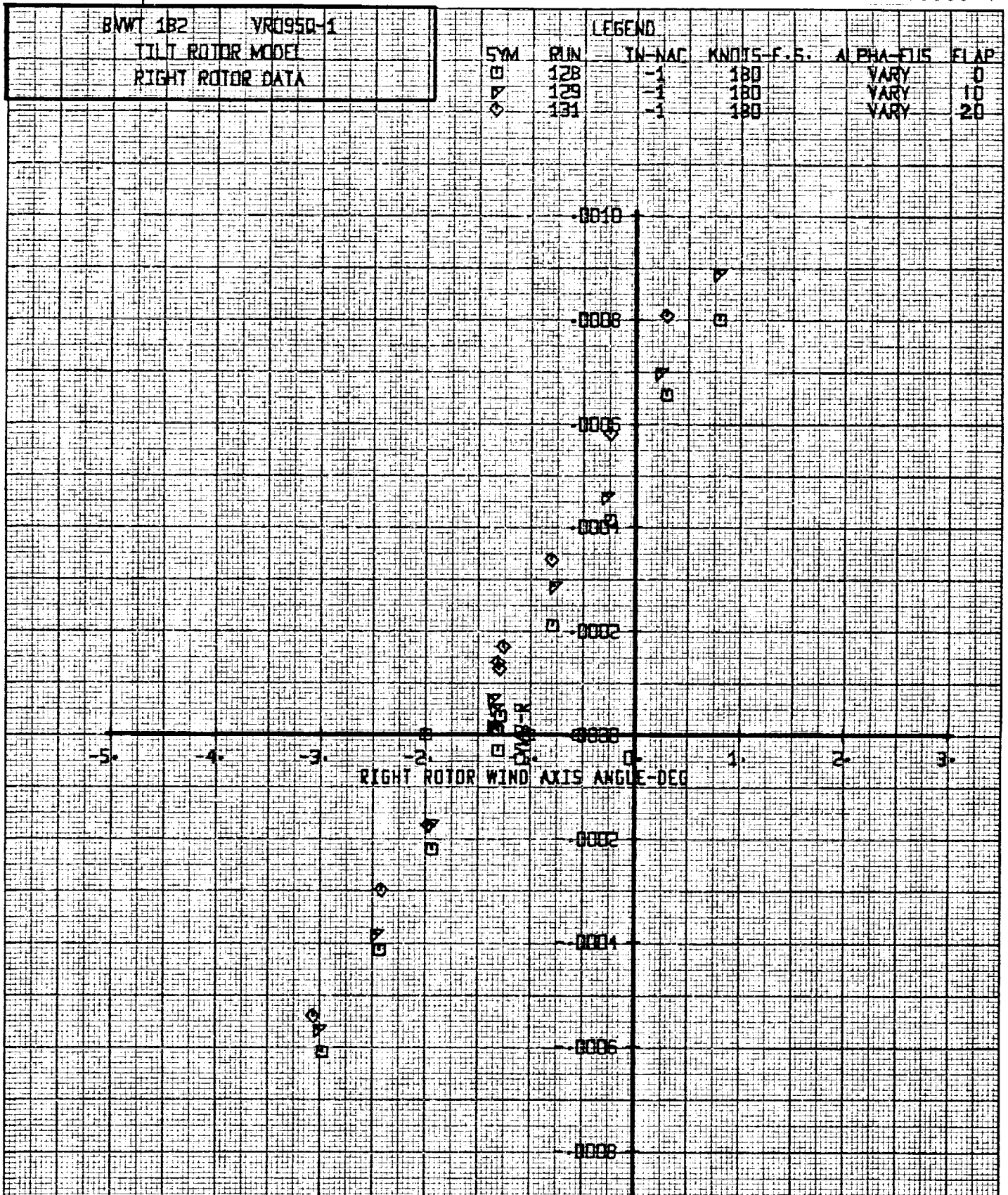
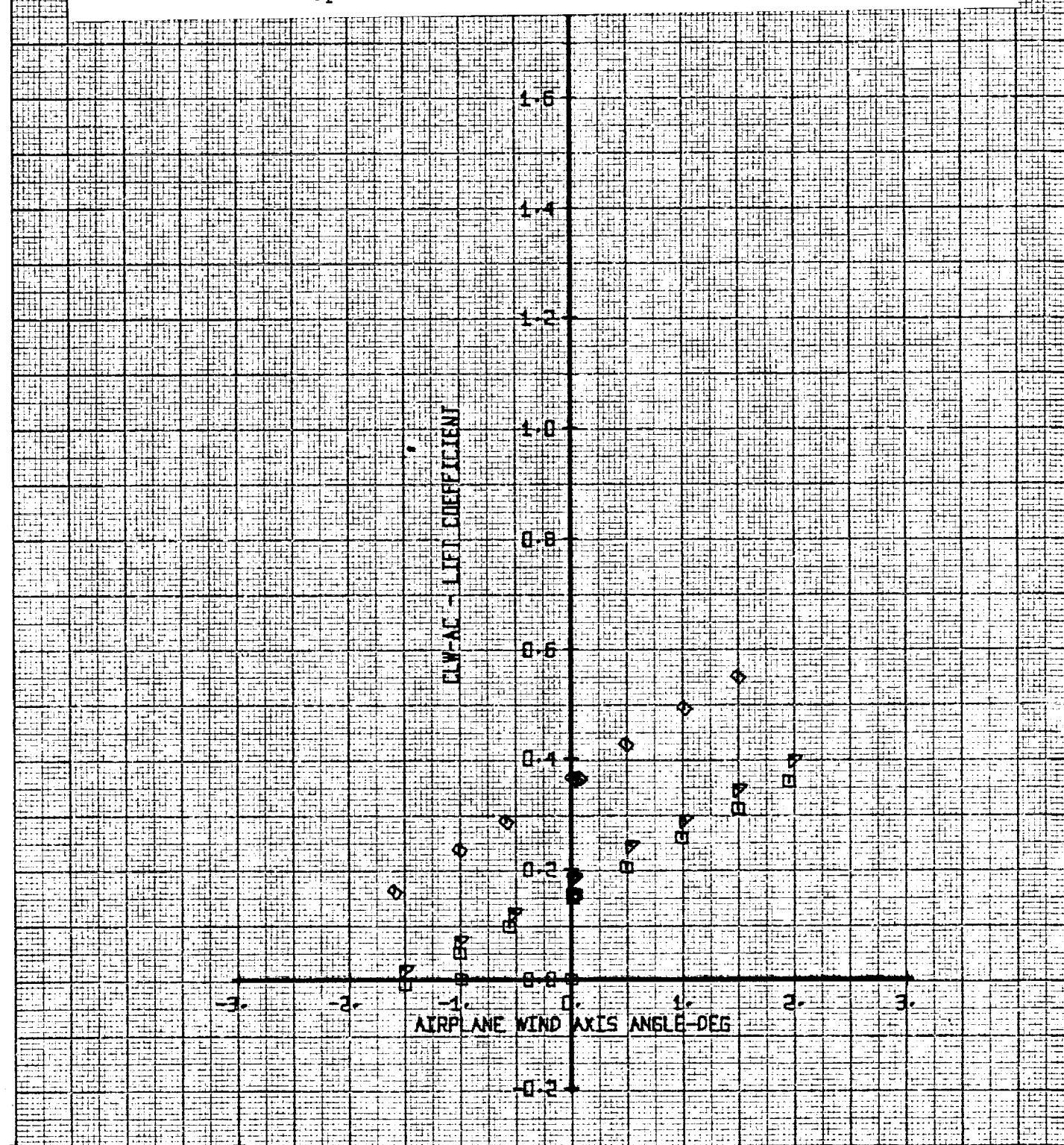
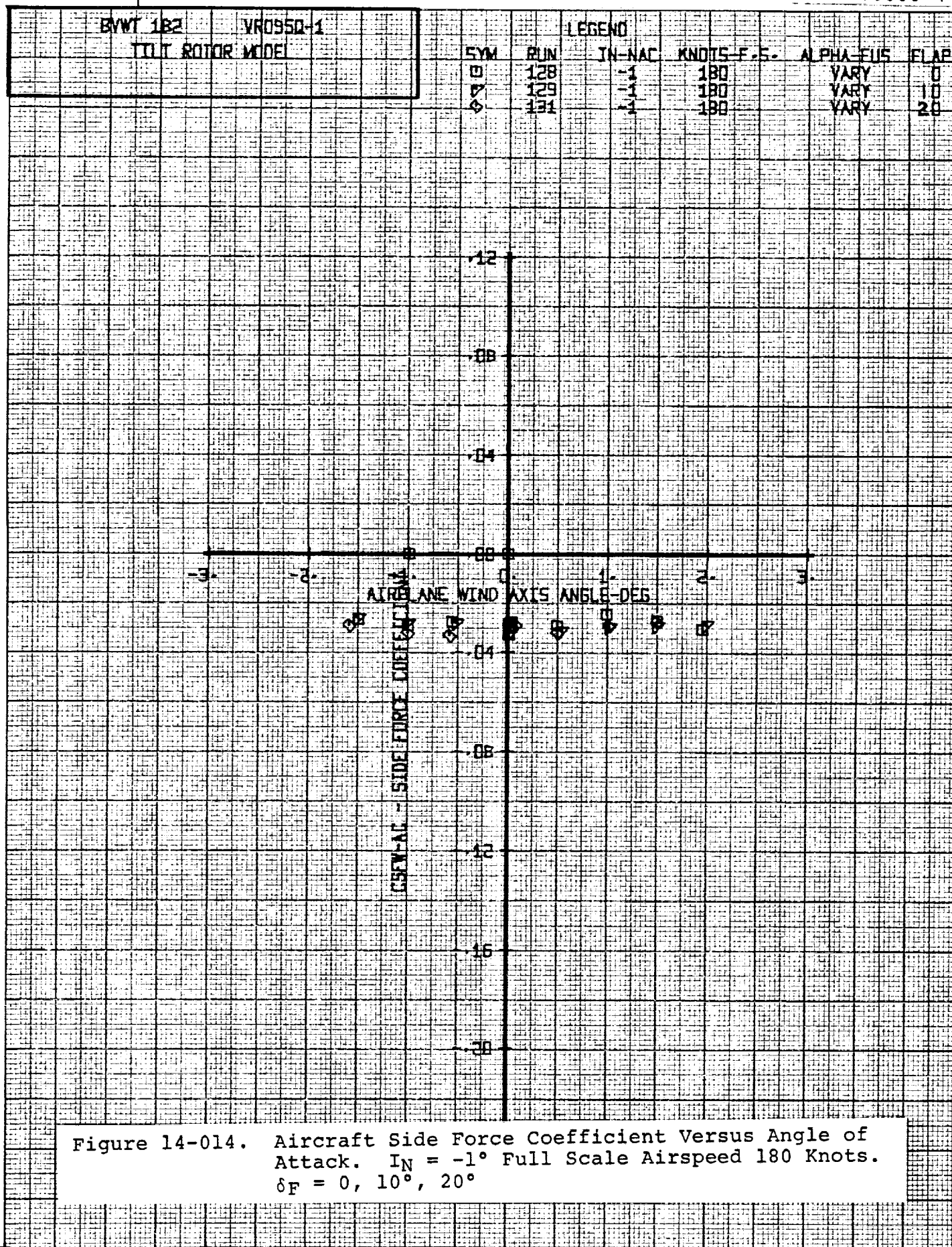


Figure 14-012. Right Rotor Yawing Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.
 $\delta F = 0, 10^\circ, 20^\circ$

BVWT 182		VR0950-1	LEGEND				
TILT ROTOR MODEL			SYM	IN	IN-NAC	KNOTS-E-S.	ALPHA-FLAP
			□	128	-1	180	VARY 0
			▽	129	-1	180	VARY 10
			◇	131	-1	180	VARY 20

Figure 14-013. Aircraft Lift Coefficient Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$





BVWT 182 VROSSQ-1
TILT ROTOR MODEL

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
○	128	-1	180	VARY	0
△	129	-1	180	VARY	10
◇	131	-1	180	VARY	20

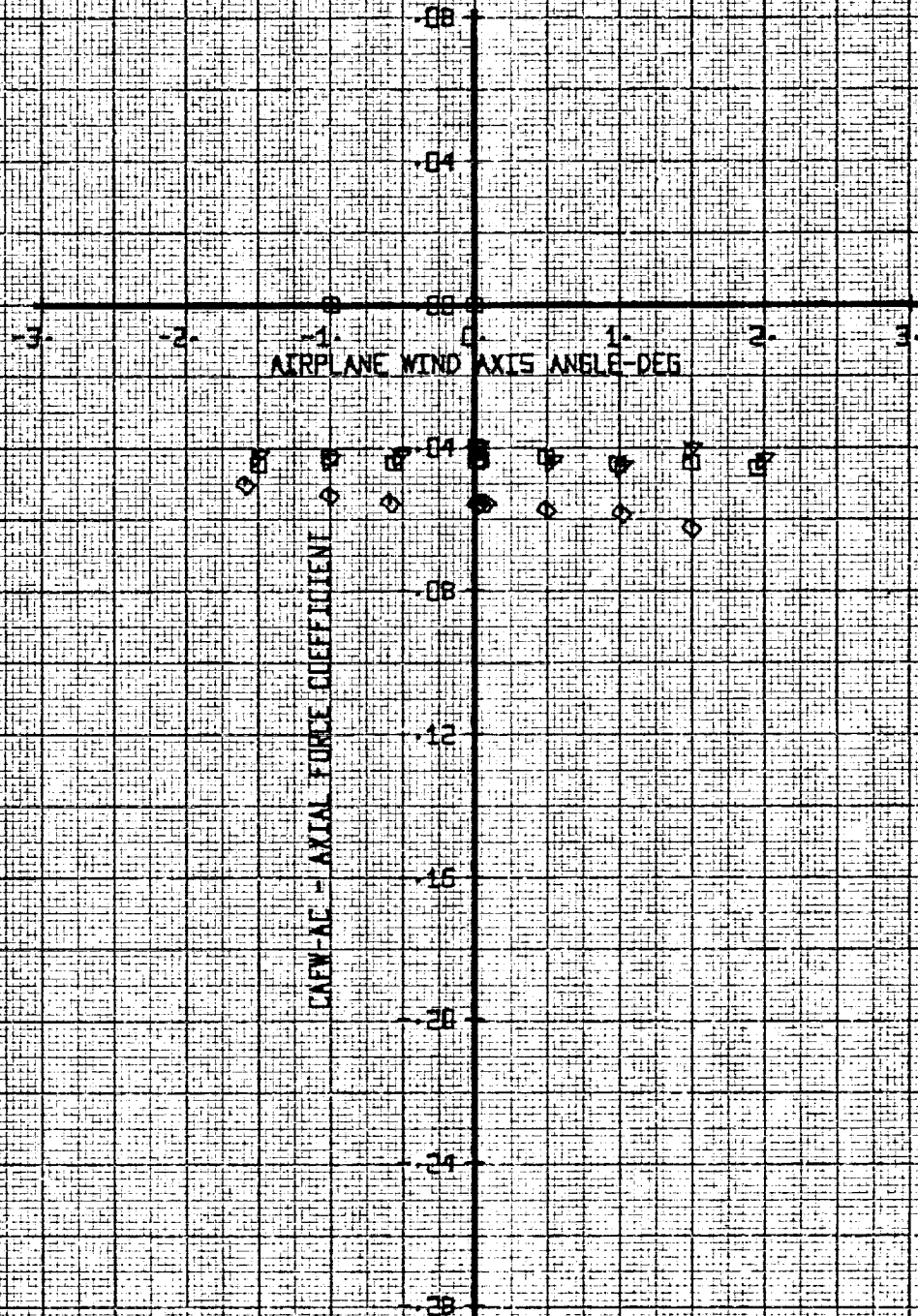


Figure 14-015. Aircraft Axial Force Coefficient Versus Angle of Attack. $IN = -1^\circ$ Full Scale Airspeed 180 Knots. $\delta F = 0, 10^\circ, 20^\circ$

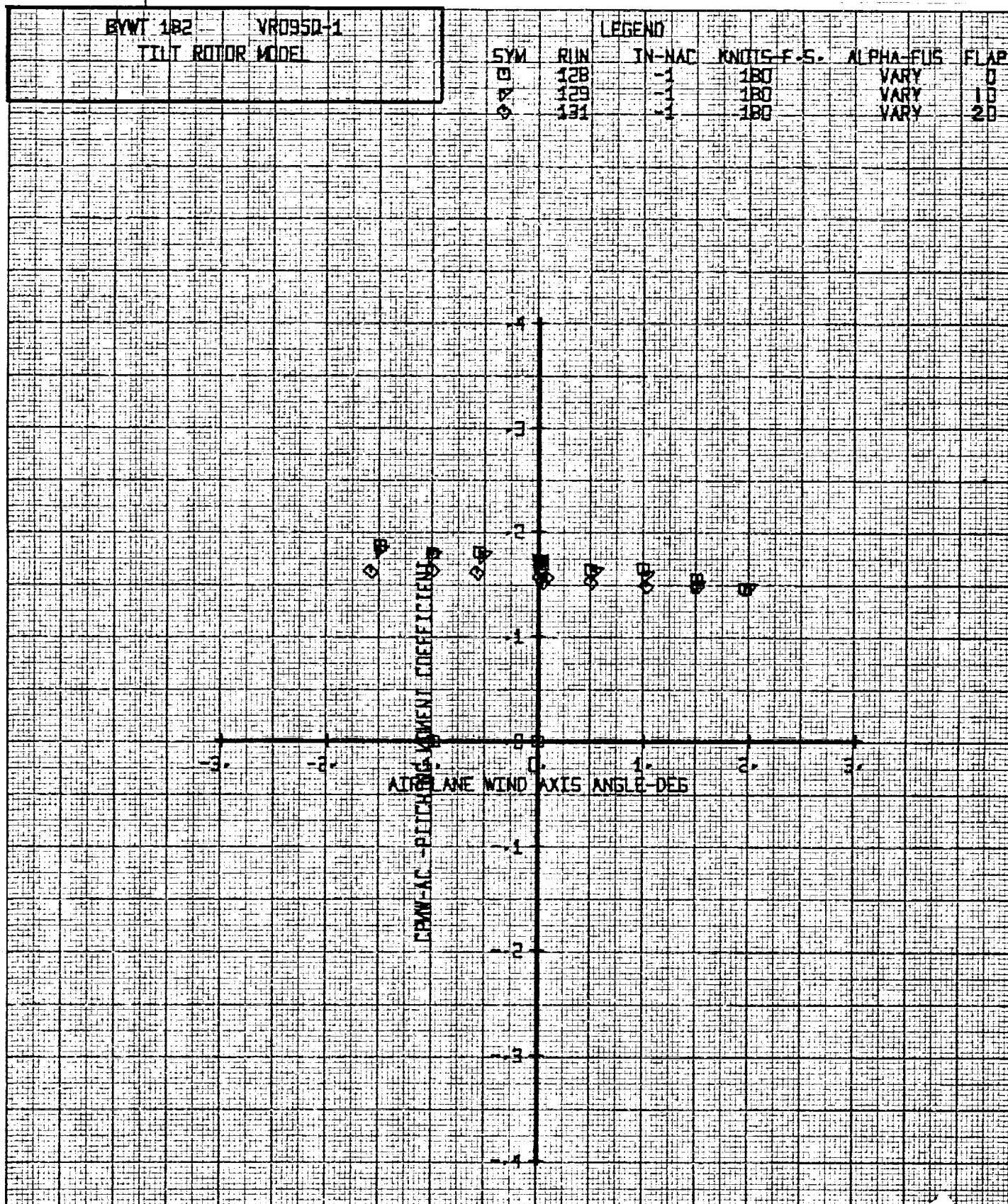
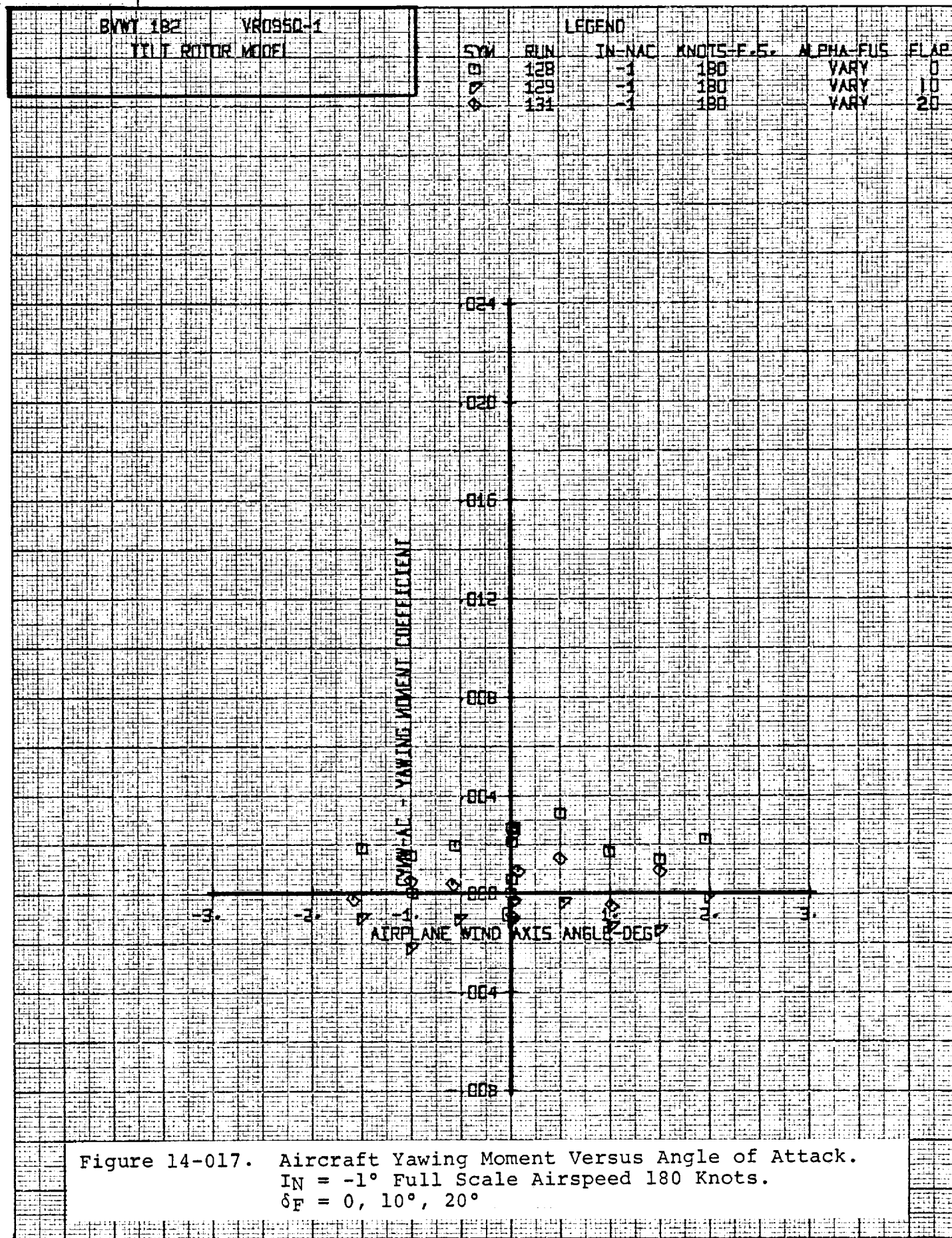


Figure 14-016. Aircraft Pitching Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$



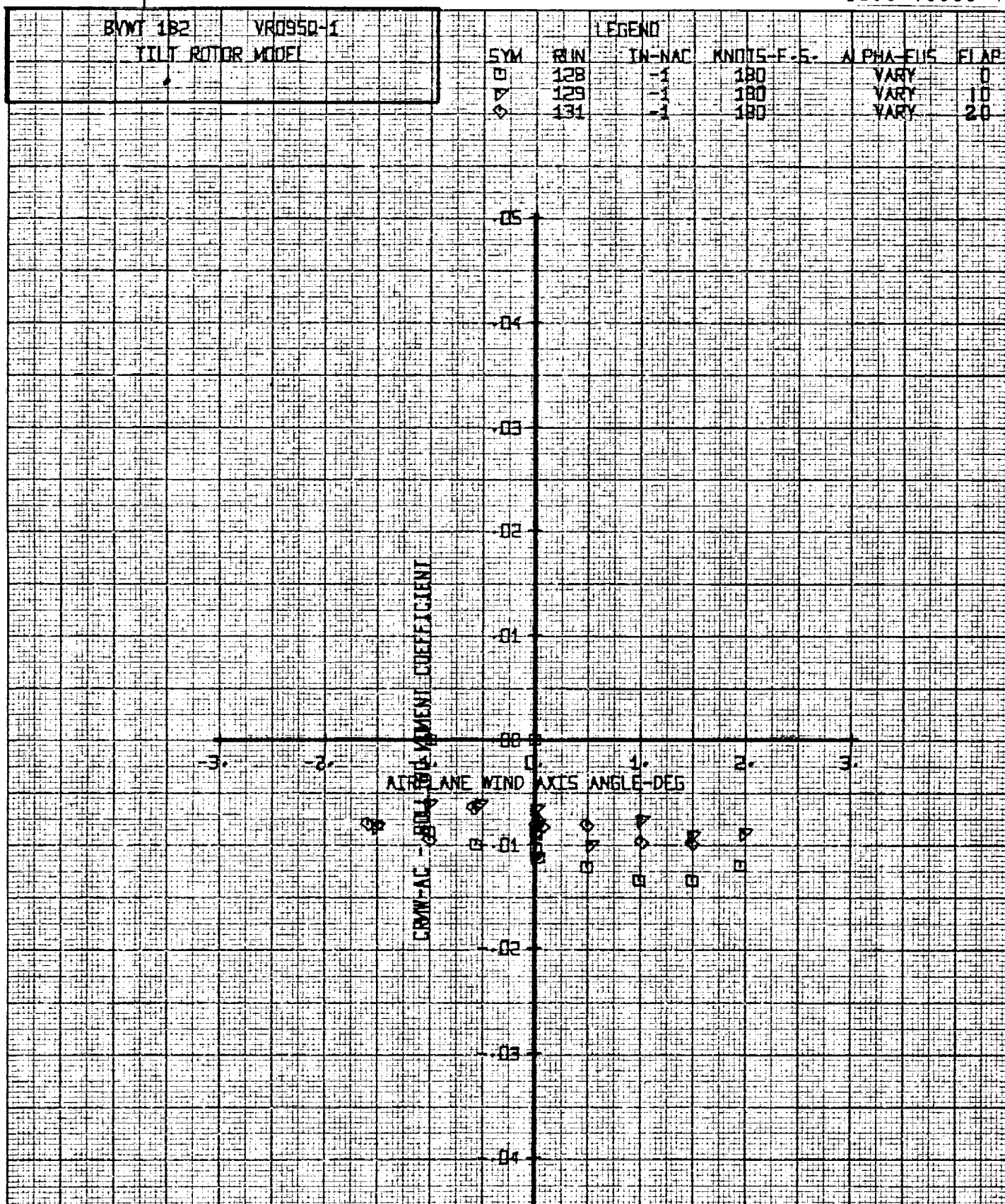


Figure 14-018. Aircraft Rolling Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$

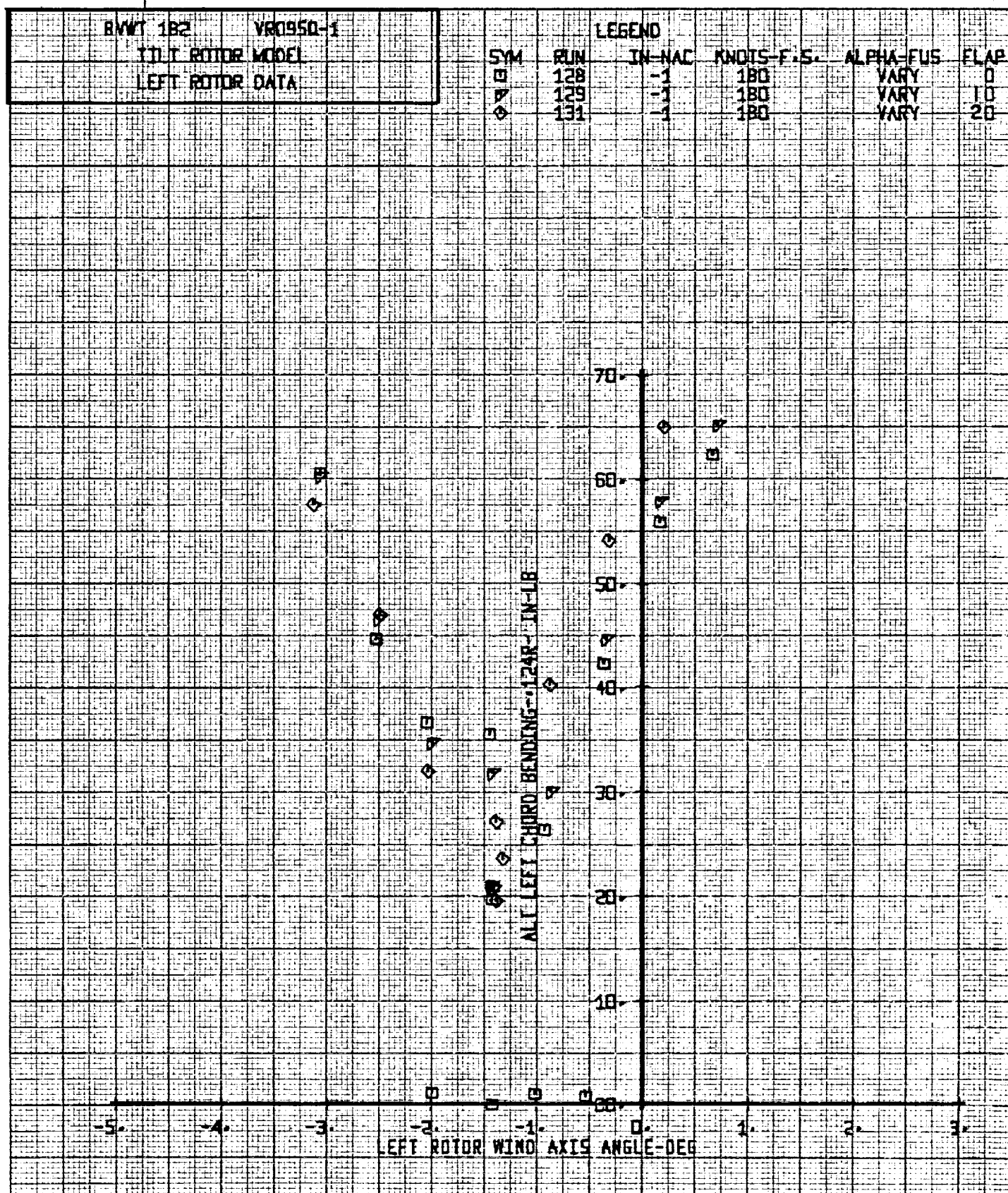


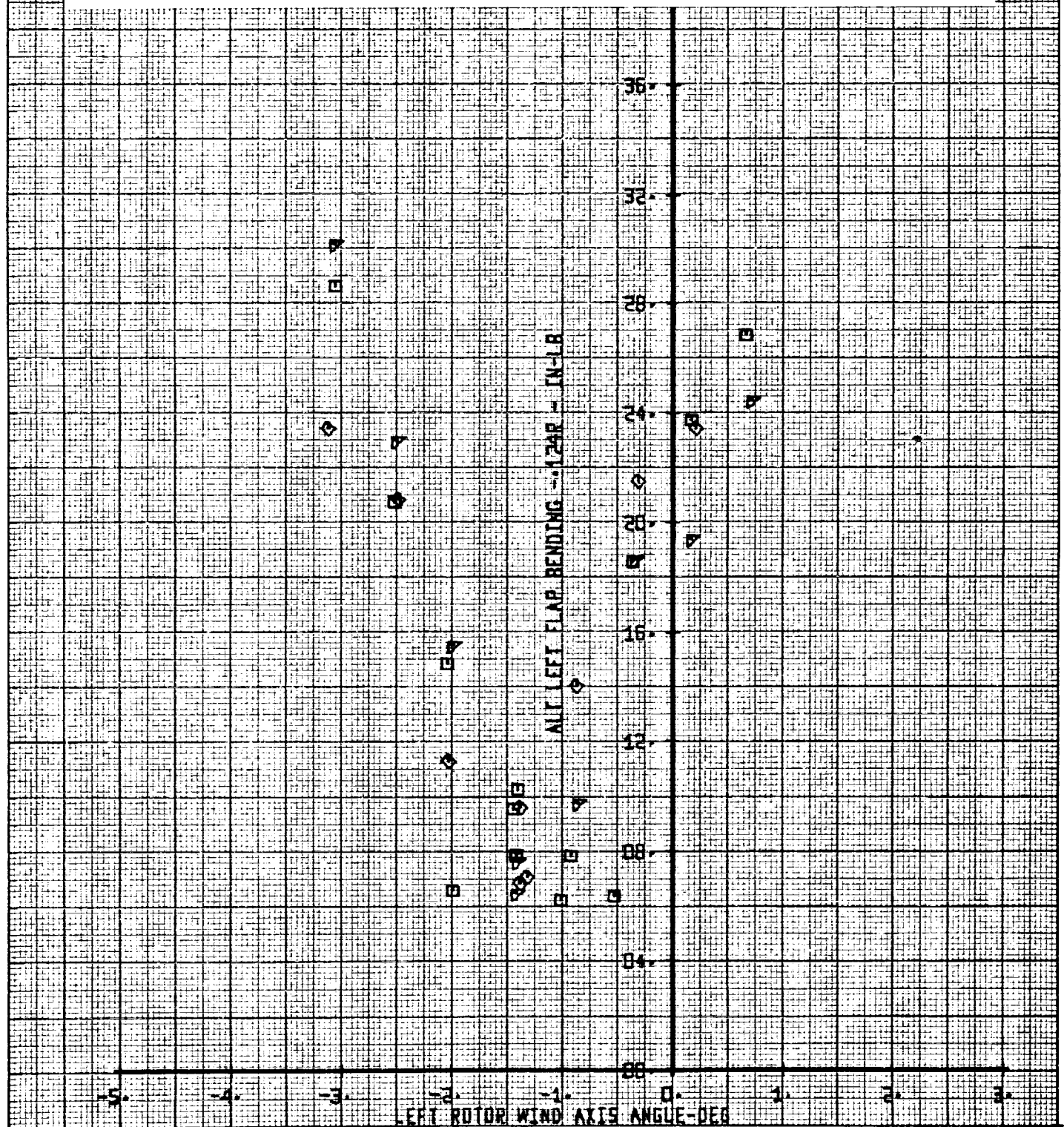
Figure 14-019. Alt. Left Chord Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots. $\delta_F = 0, 10^\circ, 20^\circ$

RVWT 182 VR0950-1
TILT ROTOR MODEL
LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	128	-1	180	VARY	0
▽	129	-1	180	VARY	10
◇	131	-1	180	VARY	20

Figure 14-020. Alt. Left Flap Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$



BWV 182 VR0950-1

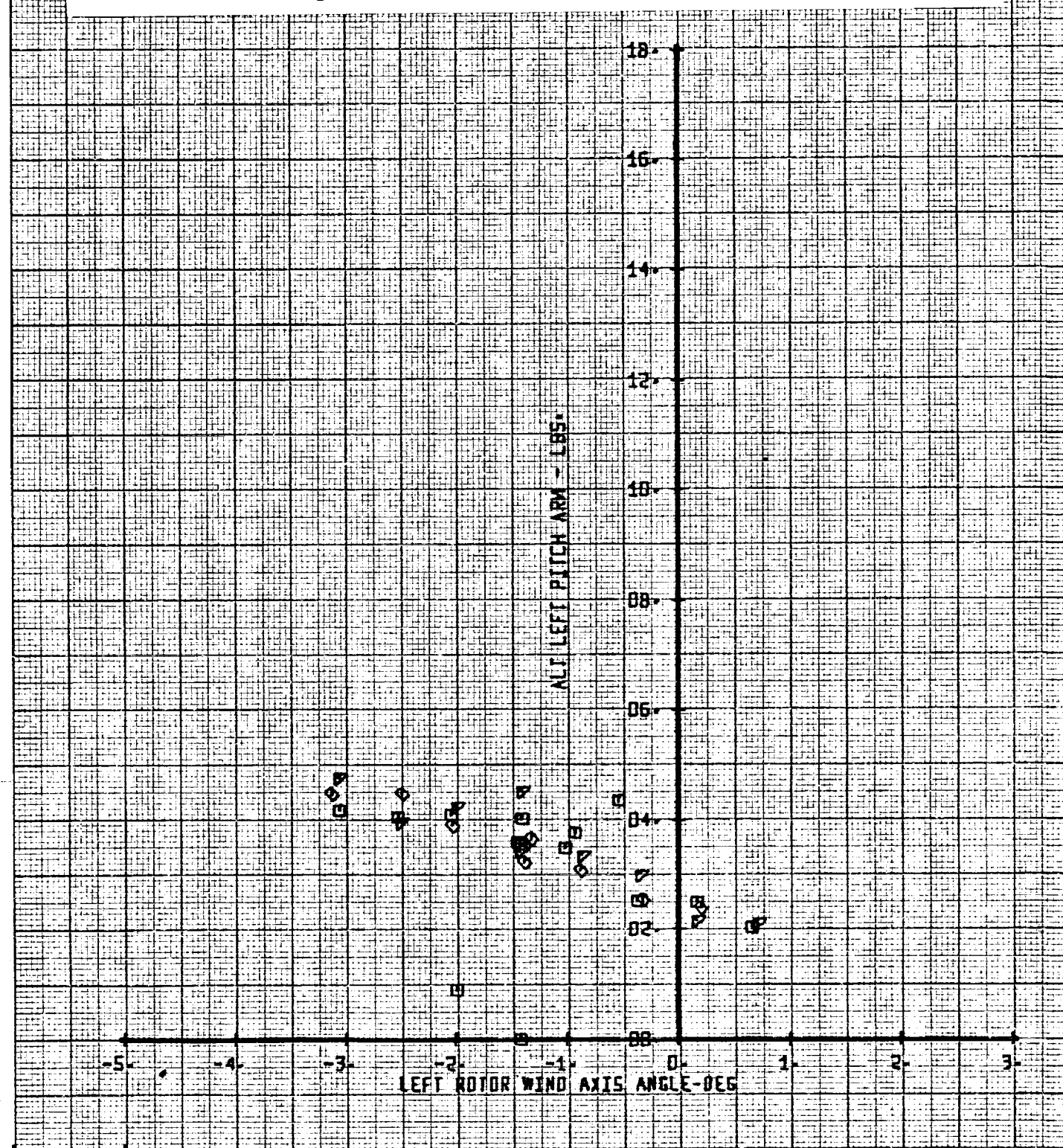
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	128	-1	180	VARY	0
▽	129	-1	180	VARY	10
◇	131	-1	180	VARY	20

Figure 14-021. Alt. Left Pitch Link Load Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$



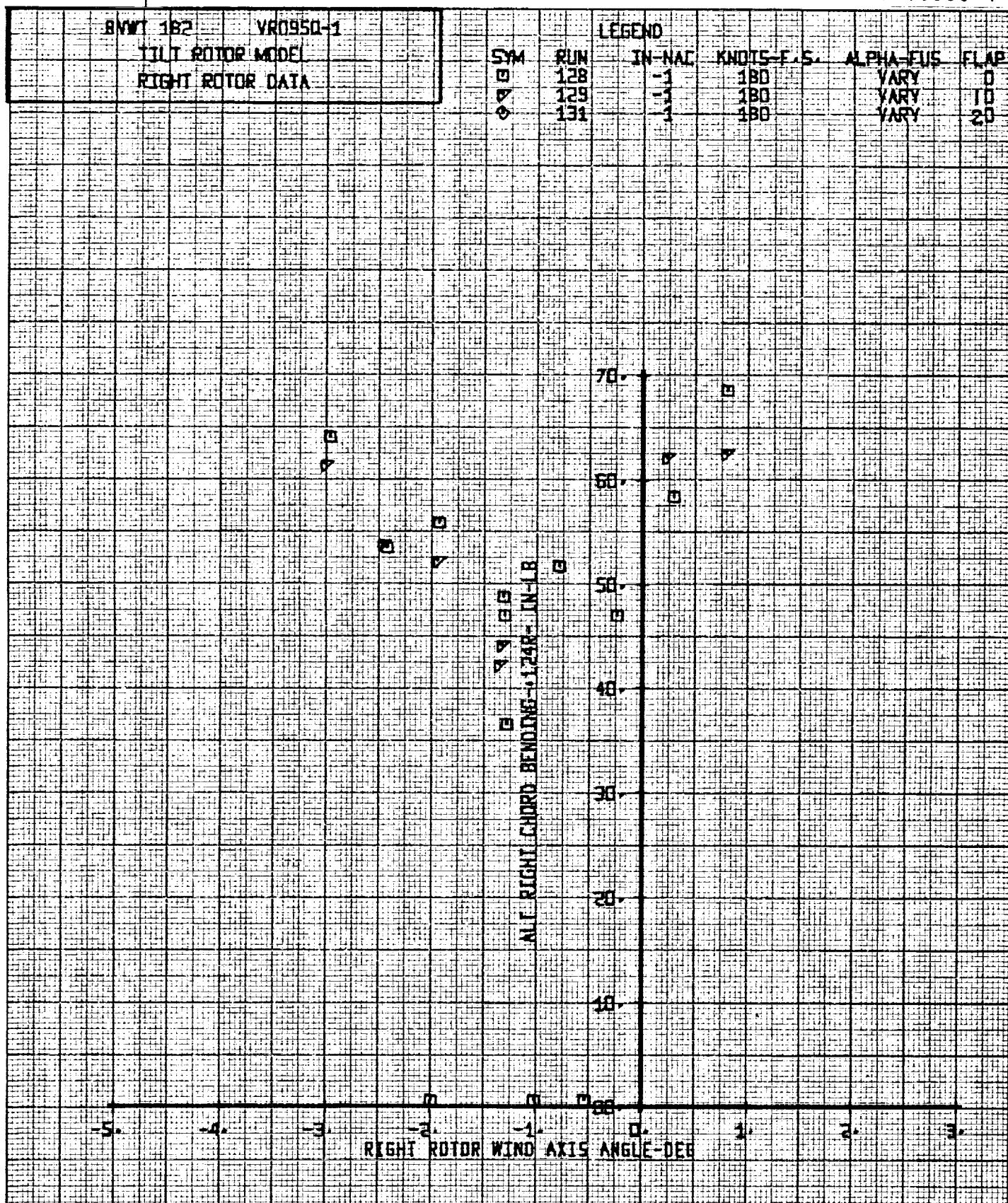
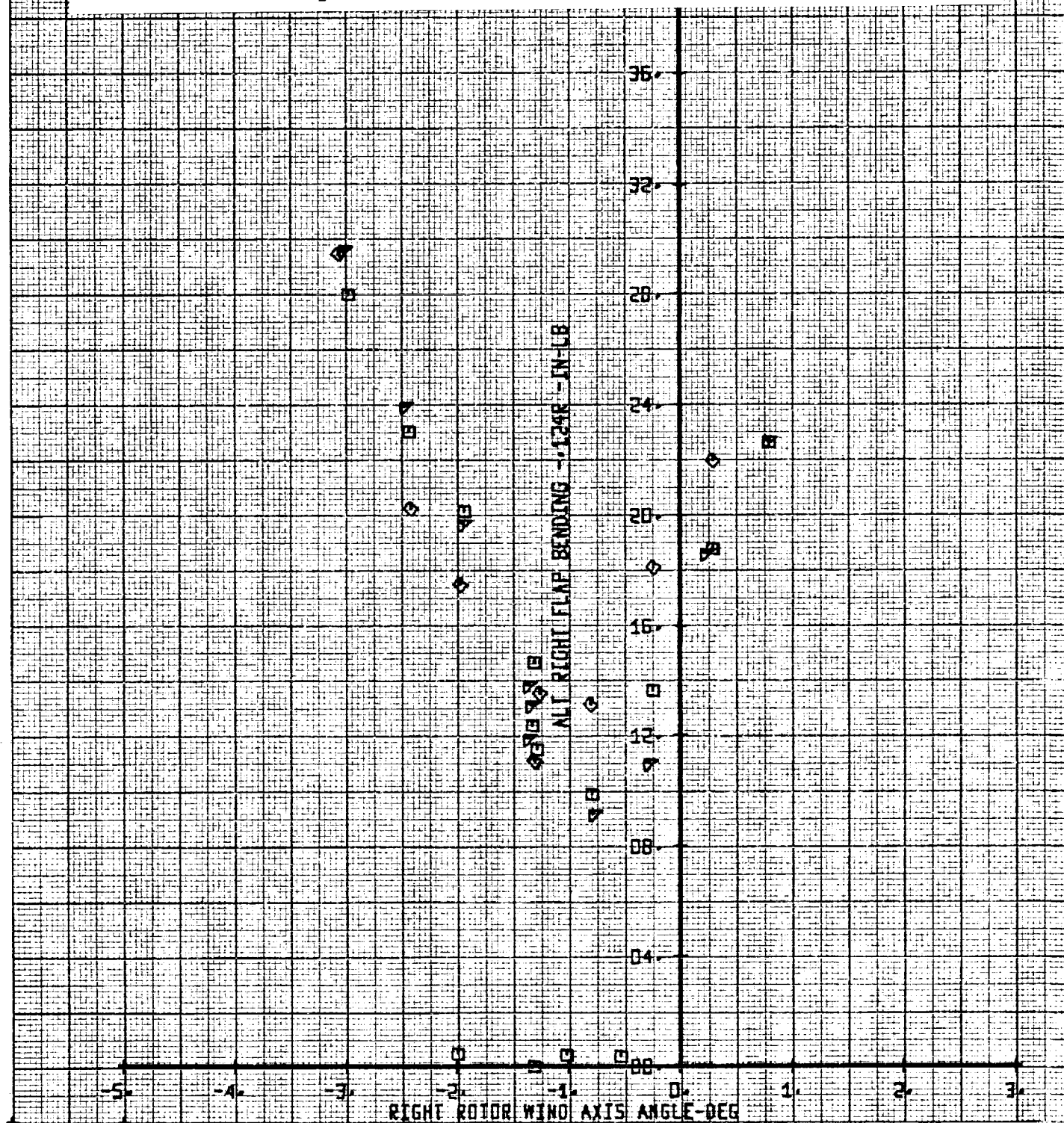


Figure 14-022. Alt. Right Chord Bending Versus Rotor Angle of Attack. $IN = -1^\circ$ Full Scale Airspeed 180 Knots.
 $\delta F = 0, 10^\circ, 20^\circ$

BWT 182		YR0950-1		LEGEND					
TILT ROTOR MODEL				SYM	RUN	IN-NAC	KNOTS-F-5	ALPHA-FUS	FLAP
RIGHT ROTOR DATA				□	128	-1	180	VARY	0
				▣	129	-1	180	VARY	10
				◇	131	-1	180	VARY	28

Figure 14-023. Alt. Right Flap Bending Versus Rotor Angle of Attack. IN = -1° Full Scale Airspeed 180 Knots. $\delta_F = 0, 10^\circ, 20^\circ$



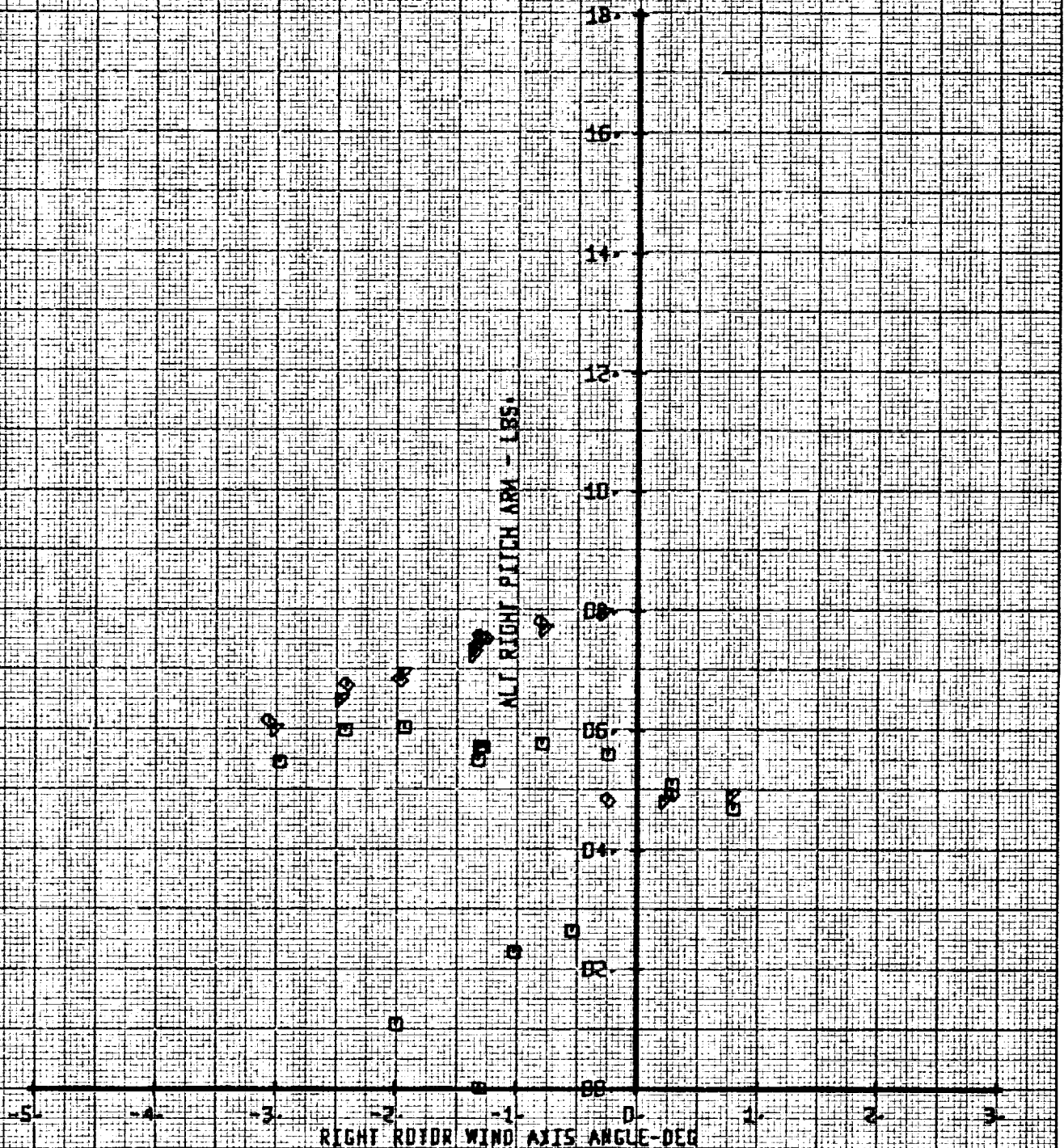
BWVT 182 VR0950-1

TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F-5	ALPHA-FUS	FLAP
□	128	-1	180	VARY	0
▽	129	-1	180	VARY	10
◇	131	1	180	VARY	20

Figure 14-024. Alt. Right Pitch Link Load Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.
 $\delta_F = 0, 10^\circ, 20^\circ$



BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

SYM

0

RUN

132

LEGEND

IN-NAC

-1

KNOTS-F.S.

180

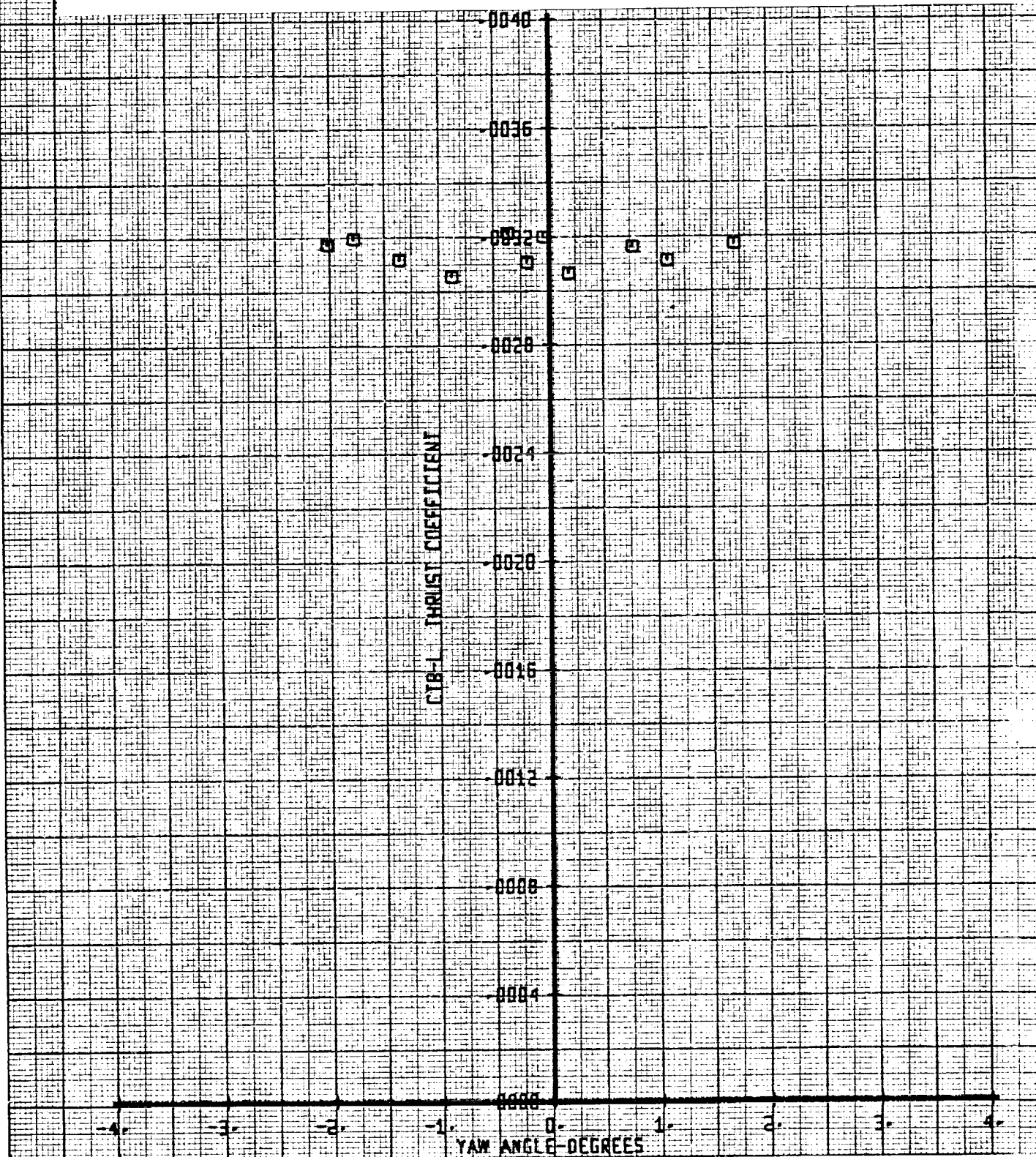
ALPHA-FUS

0

FLAP

0

Figure 14-025. Left Rotor Thrust Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

132

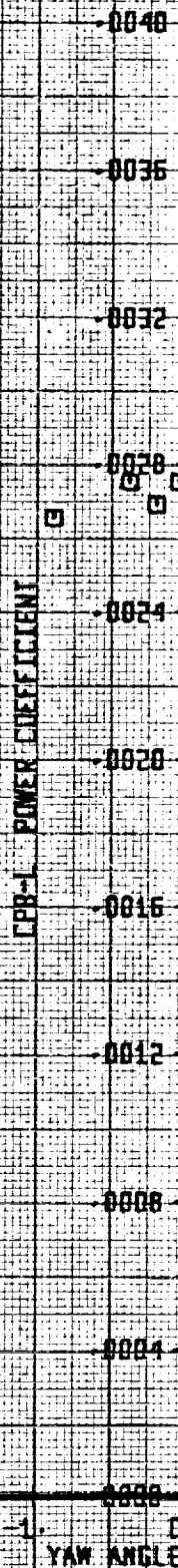
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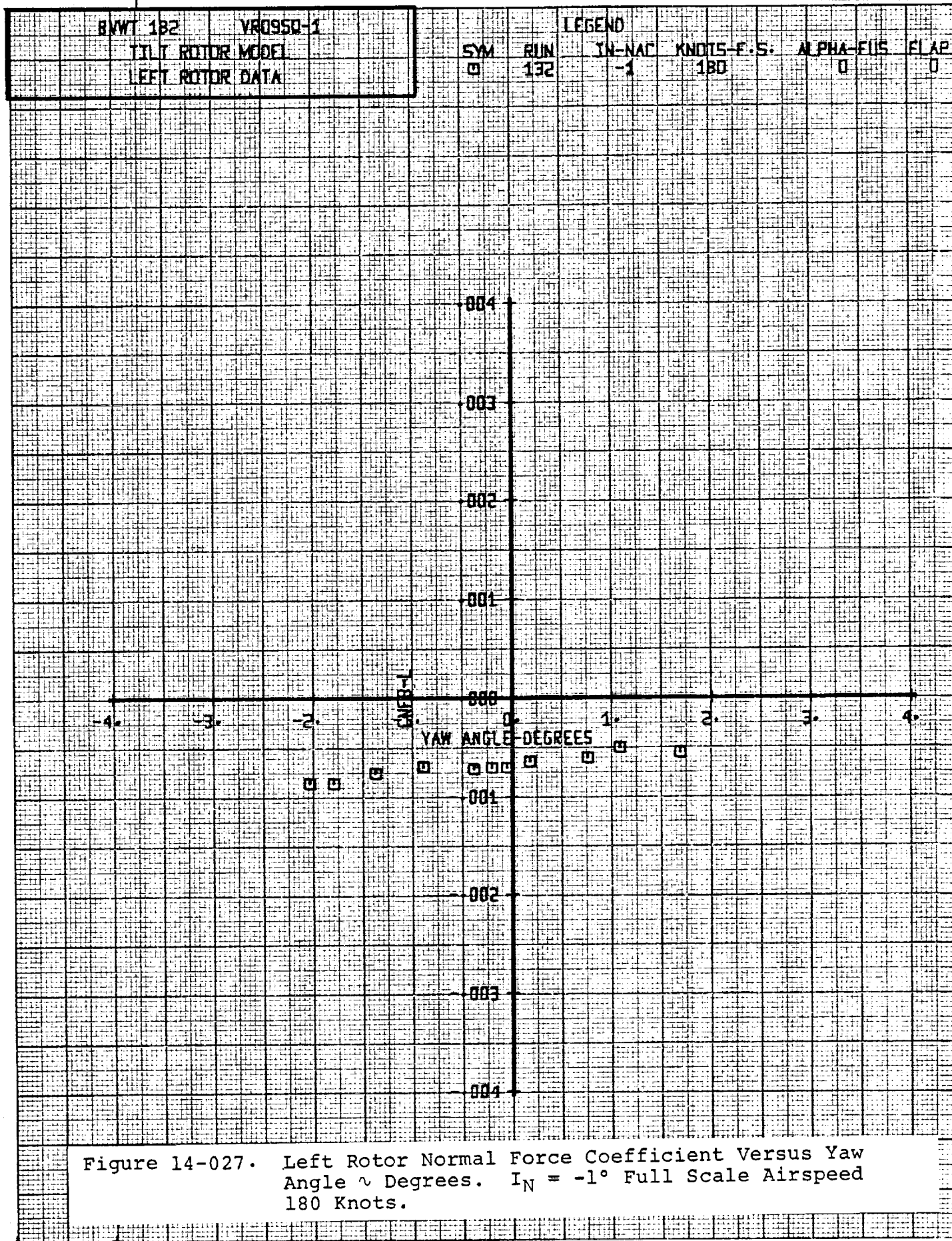
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0

0

Figure 14-026. Left Rotor Power Coefficient Versus Yaw Angle α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.





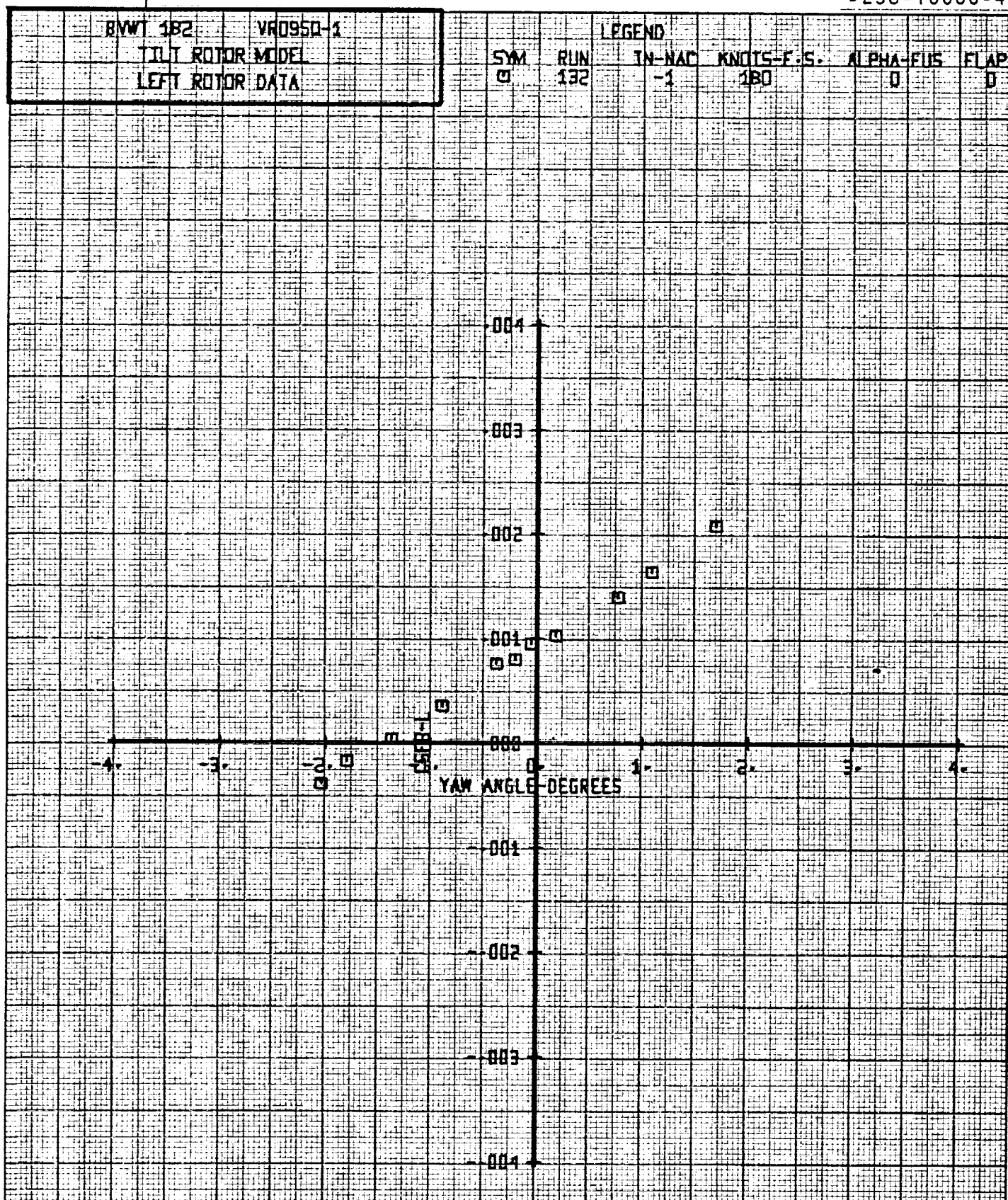


Figure 14-028. Left Rotor Side Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

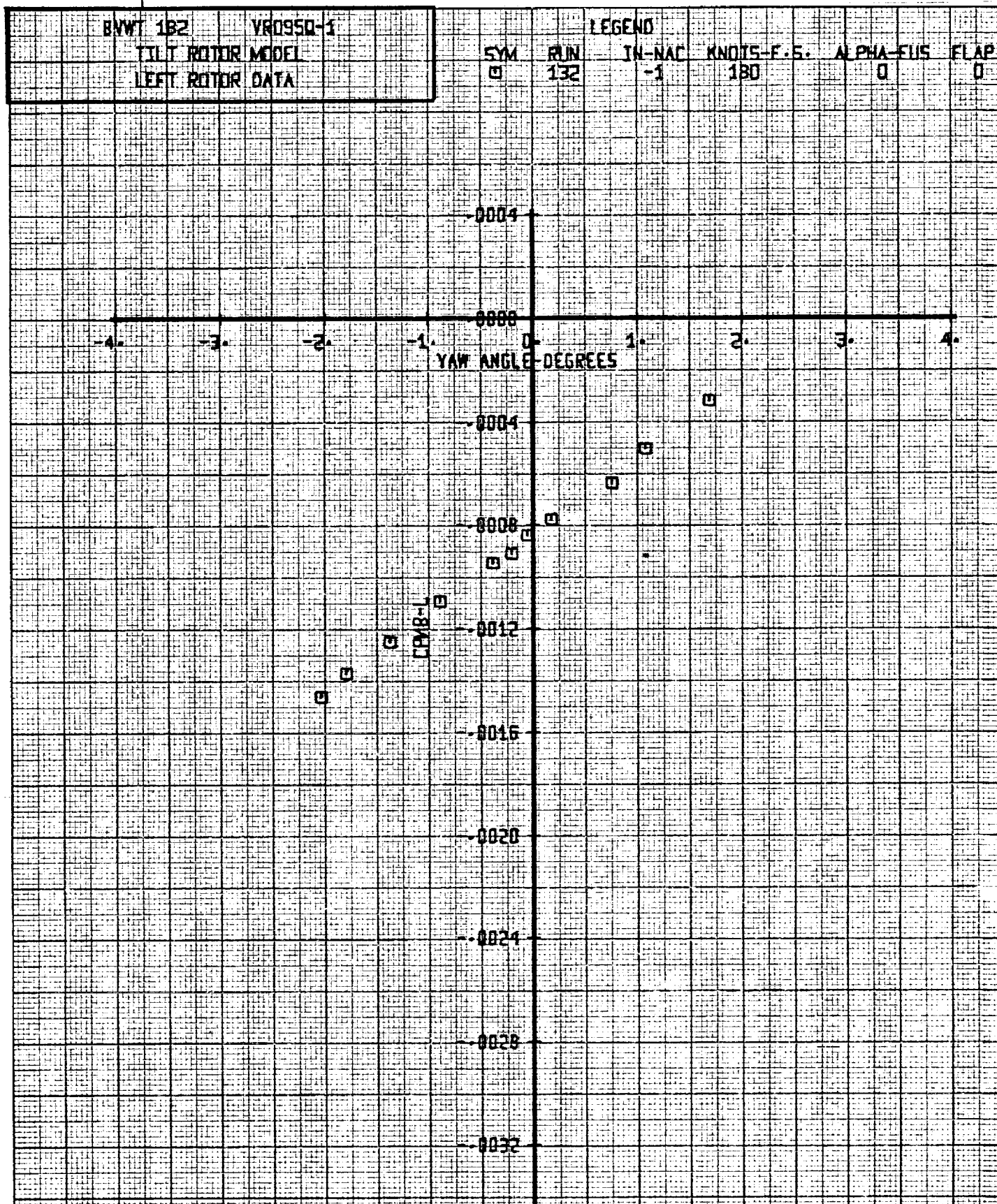


Figure 14-029. Left Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

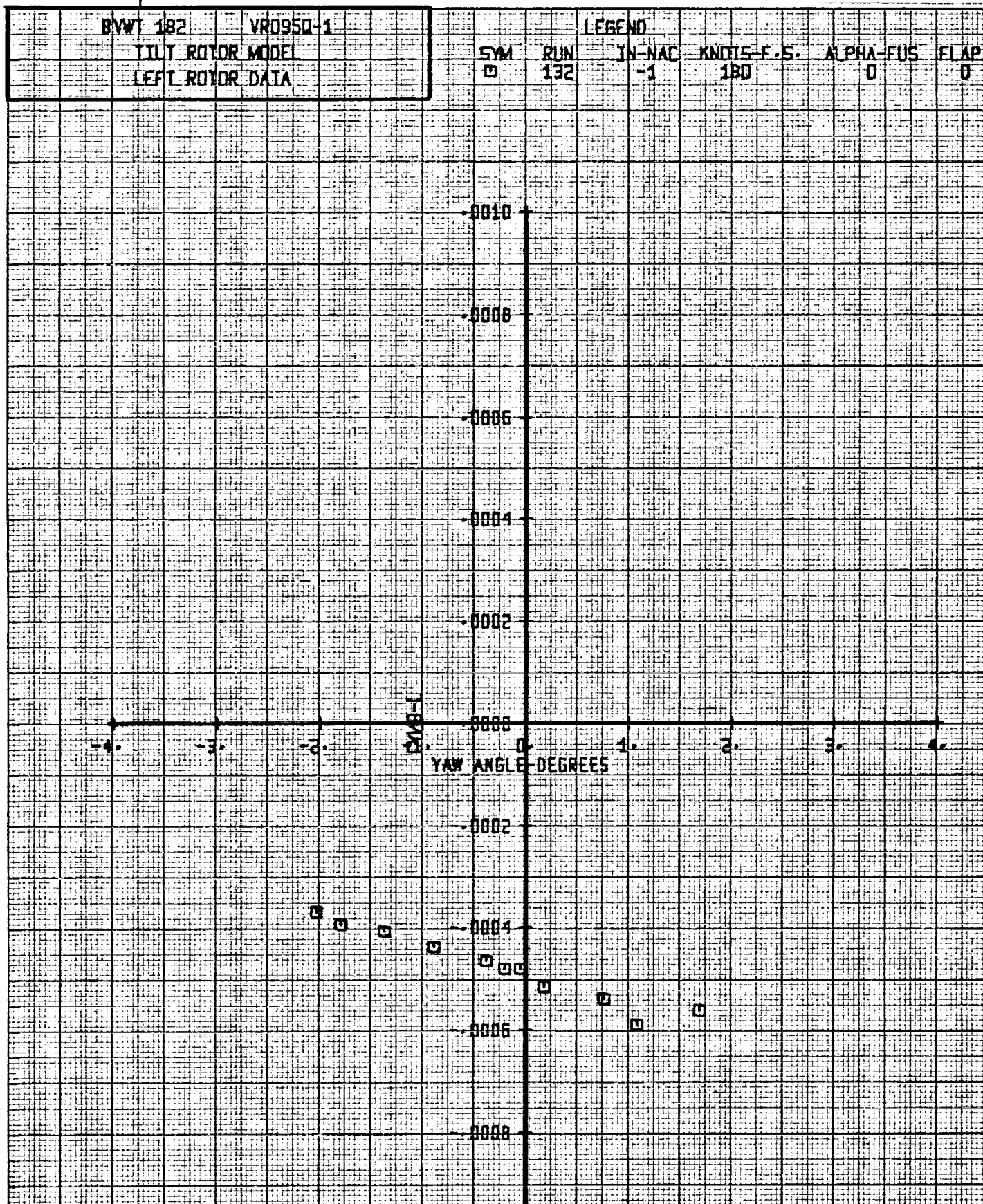


Figure 14-030. Left Rotor Yawing Moment Versus Yaw Angle γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

BVWT 182 VR0950-1

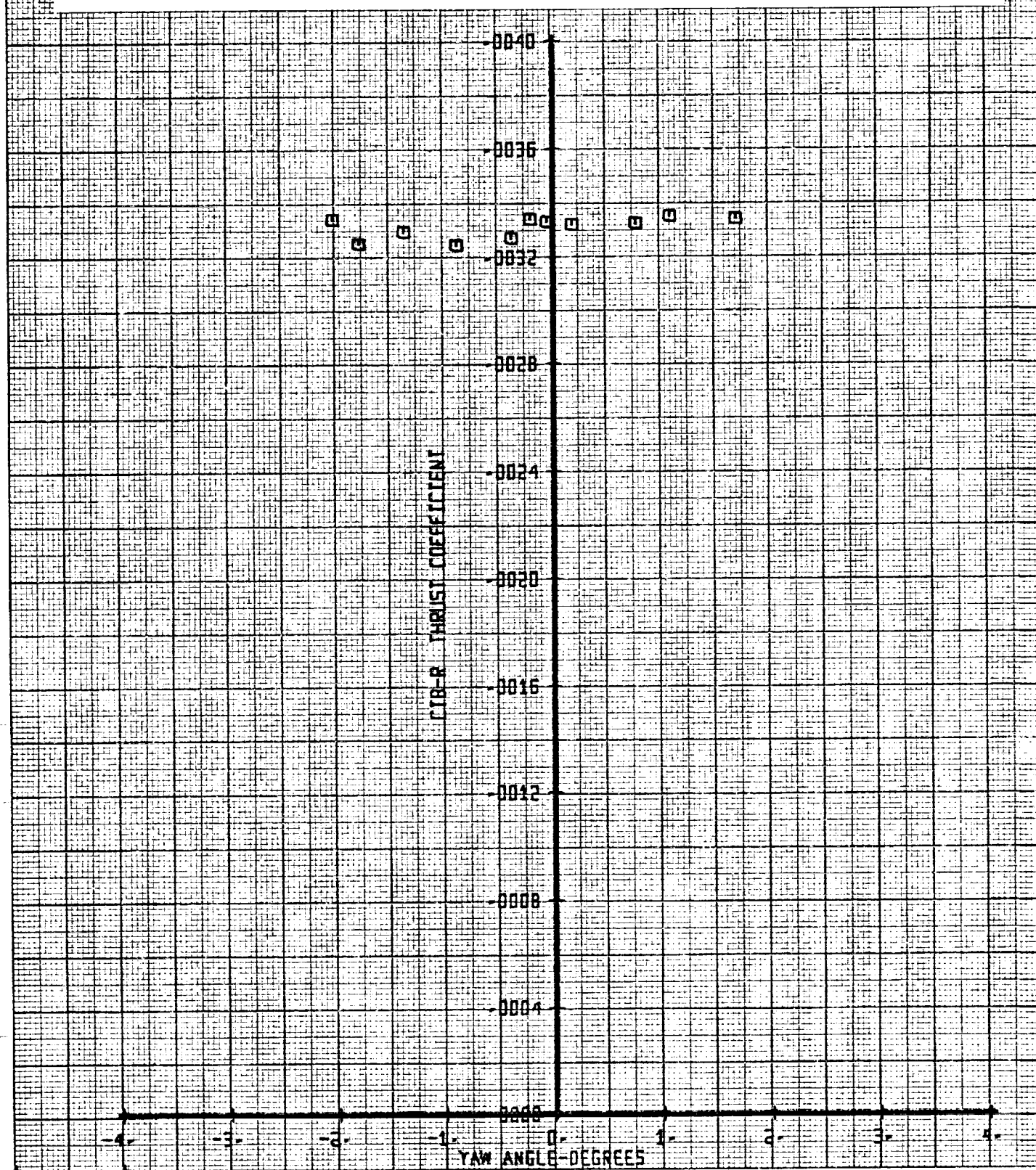
LIFT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM
□RUN
132IN-NAC
-1KNOTS-F.S.
180ALPHA-FLS
0FLAP
0

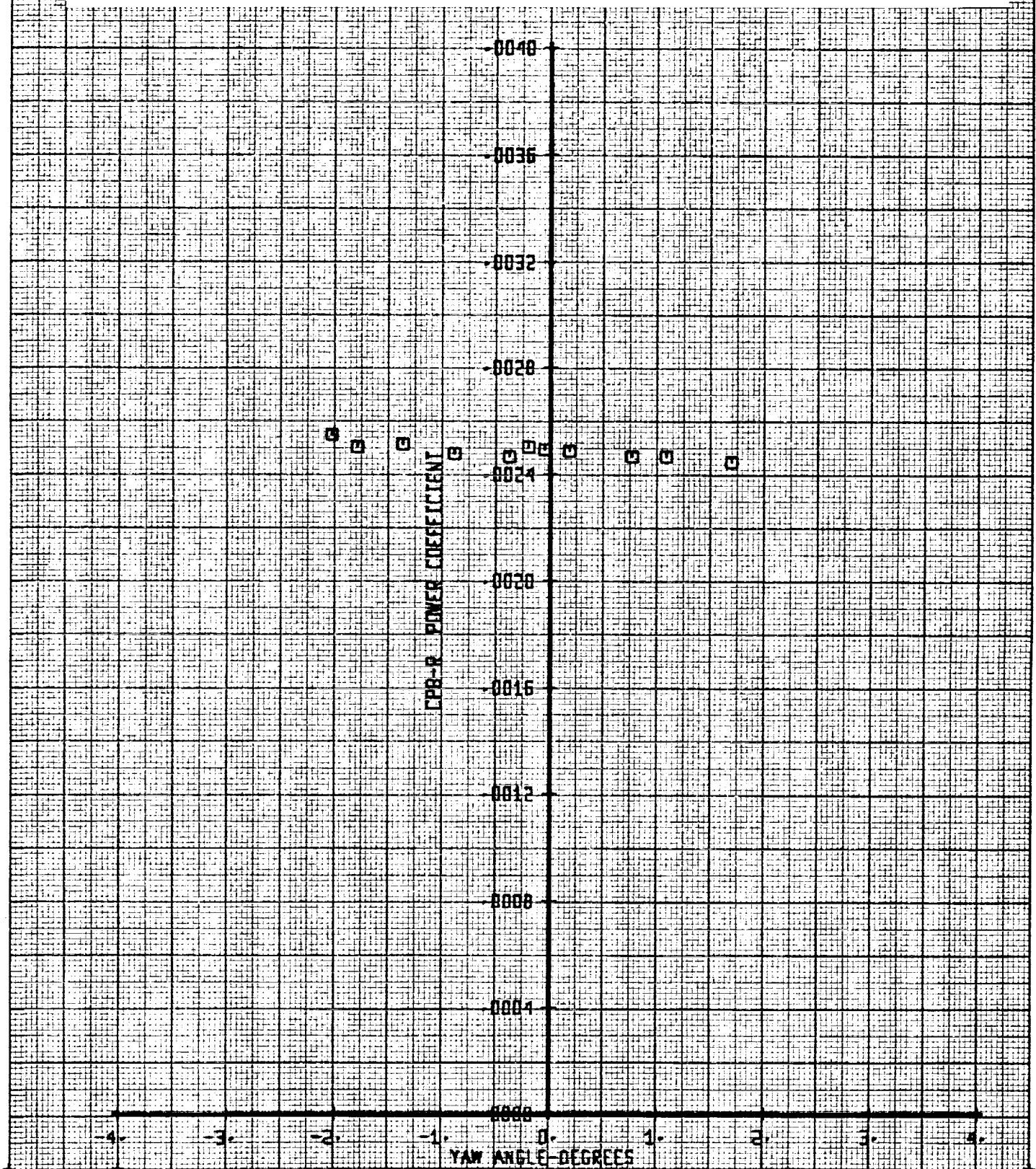
Figure 14-031. Right Rotor Thrust Coefficient Versus Yaw Angle
 α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

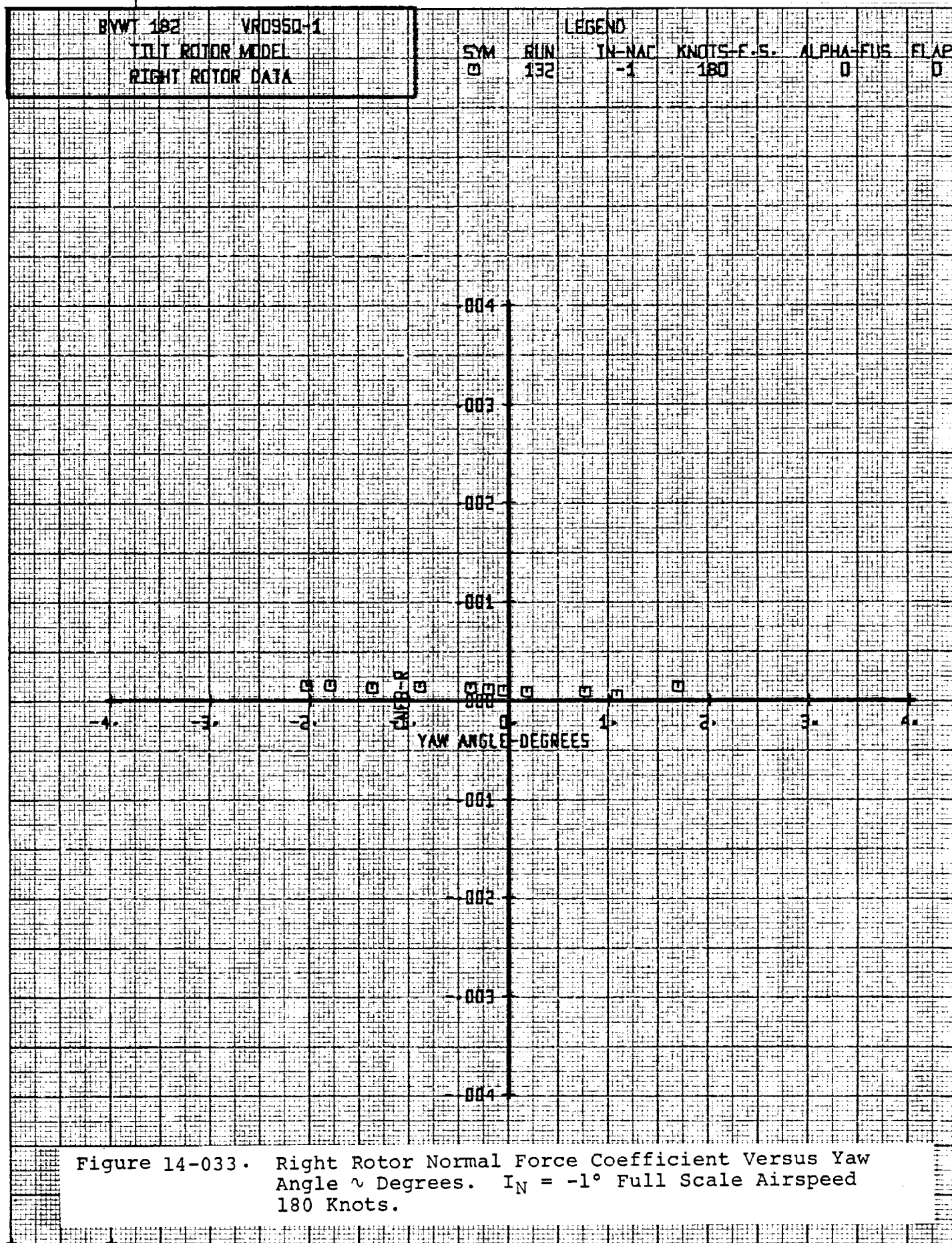


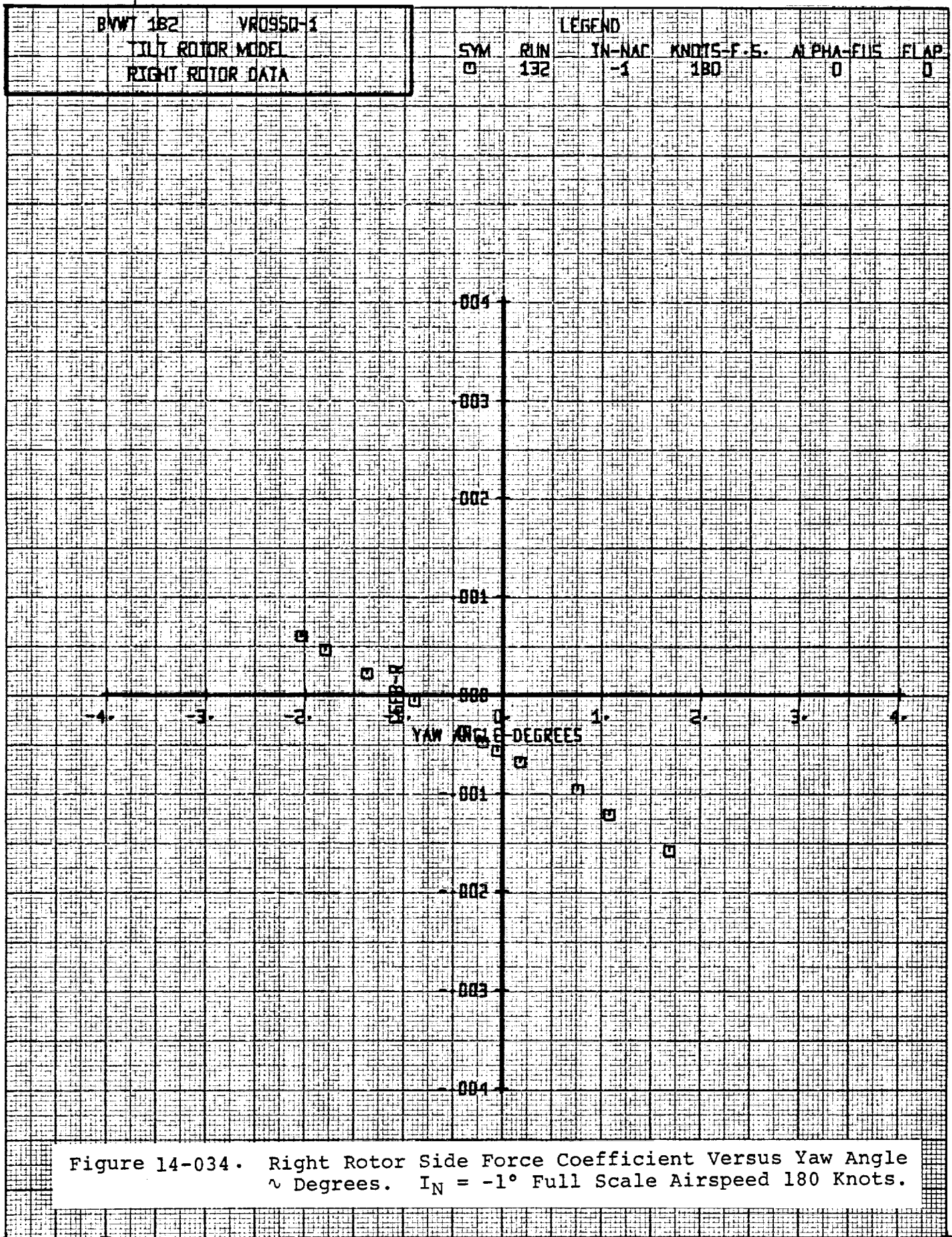
BVWT 182 VR0950-1
 TILT ROTOR MODEL
 RIGHT ROTOR DATA

LEGEND
 SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
 □ 132 -1 180 0 0

Figure 14-032. Right Rotor Power Coefficient Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.







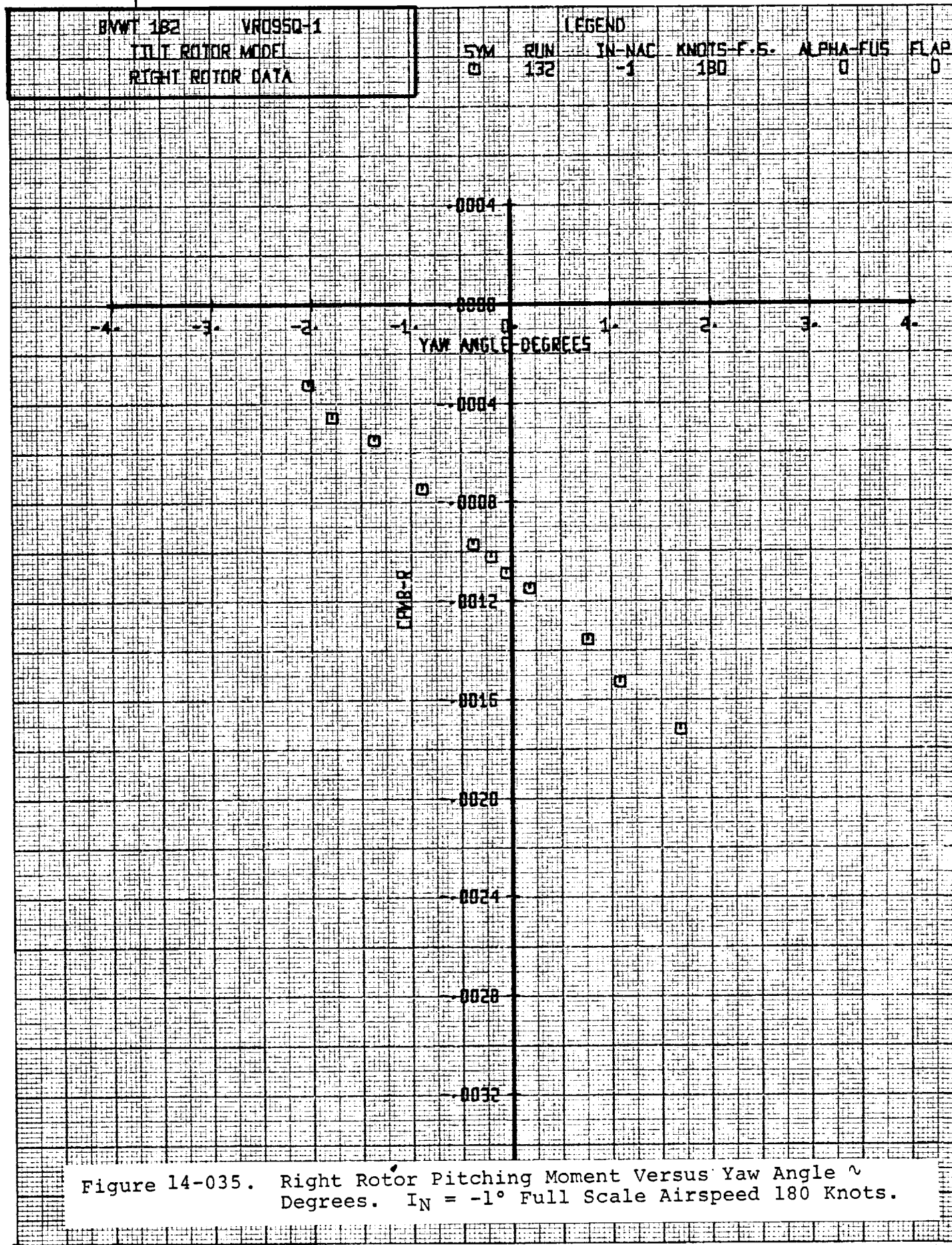


Figure 14-035. Right Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

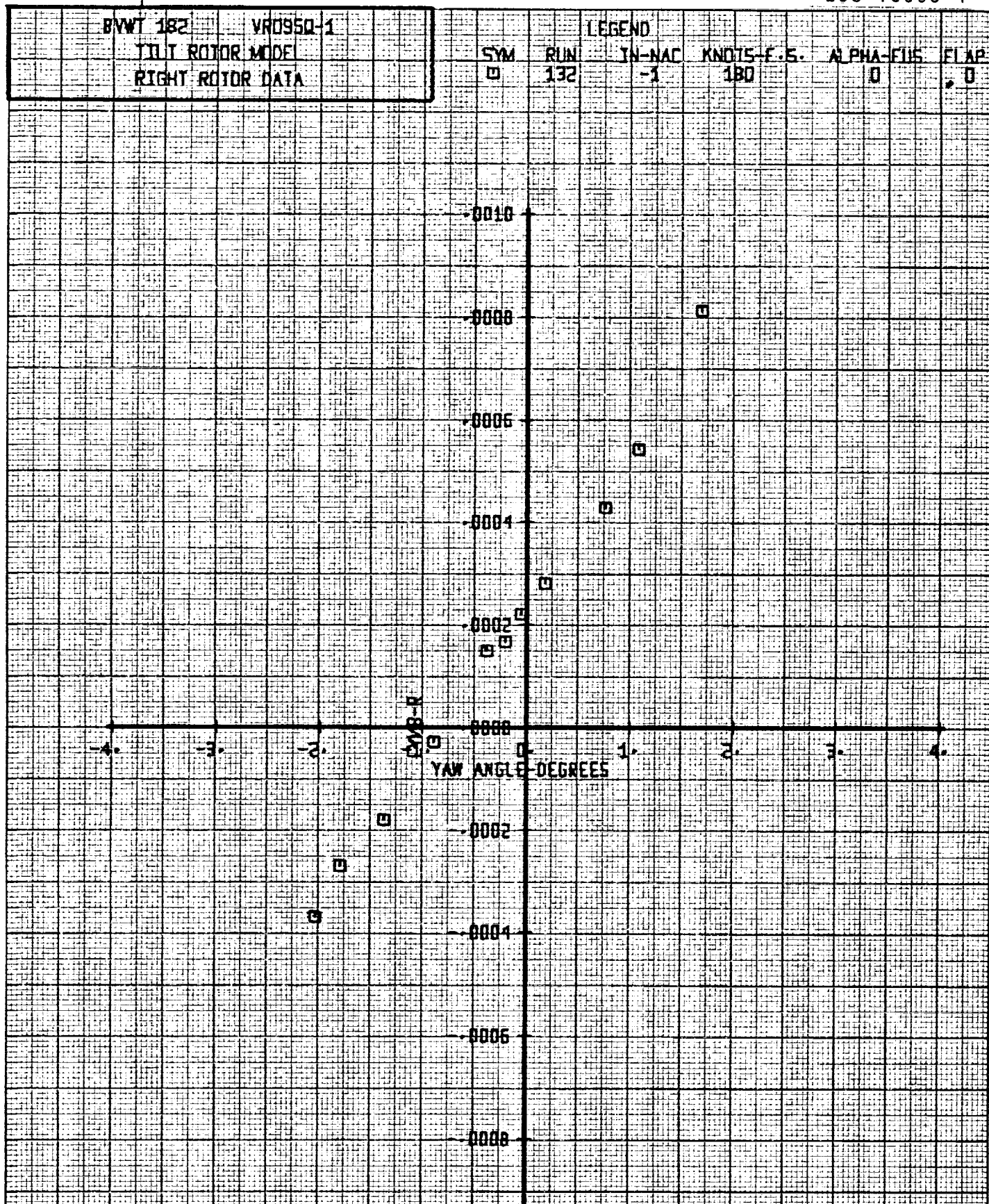


Figure 14-036. Right Rotor Yawing Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

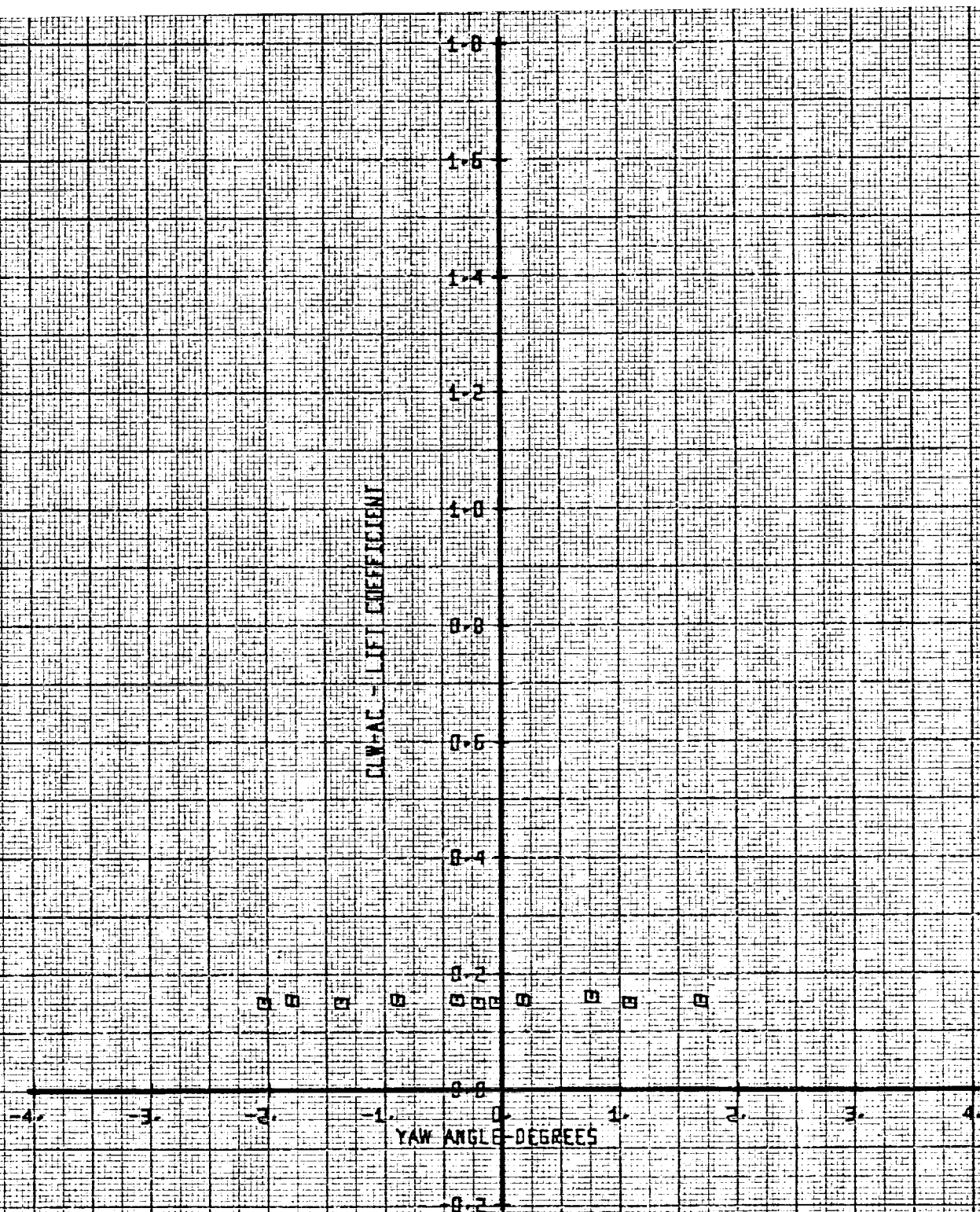
BVWT 182 VR0950-1

TILT ROTOR MODE

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	132	-1	180	0	0

Figure 14-037. Aircraft Lift Coefficient Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



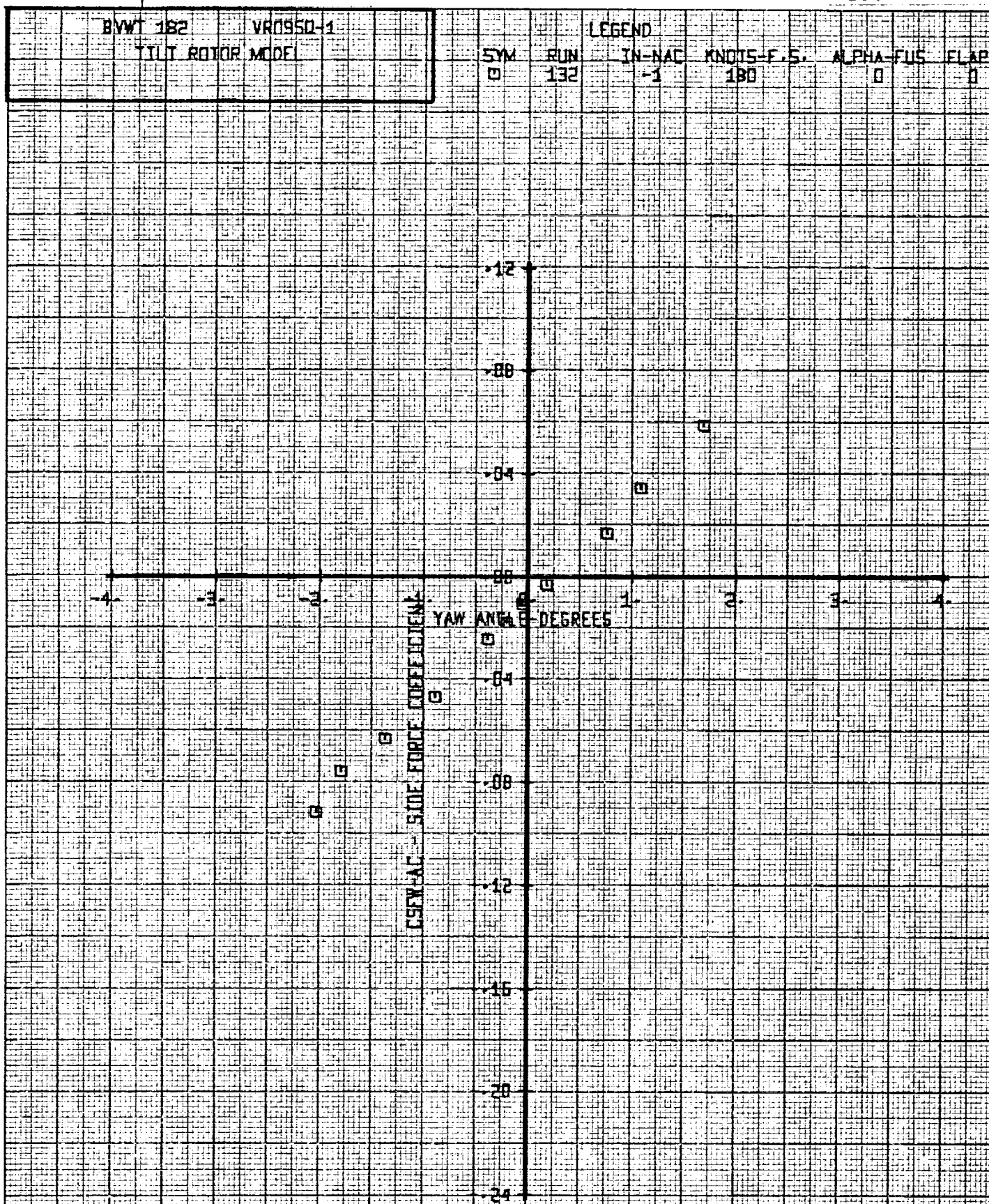


Figure 14-038. Aircraft Side Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

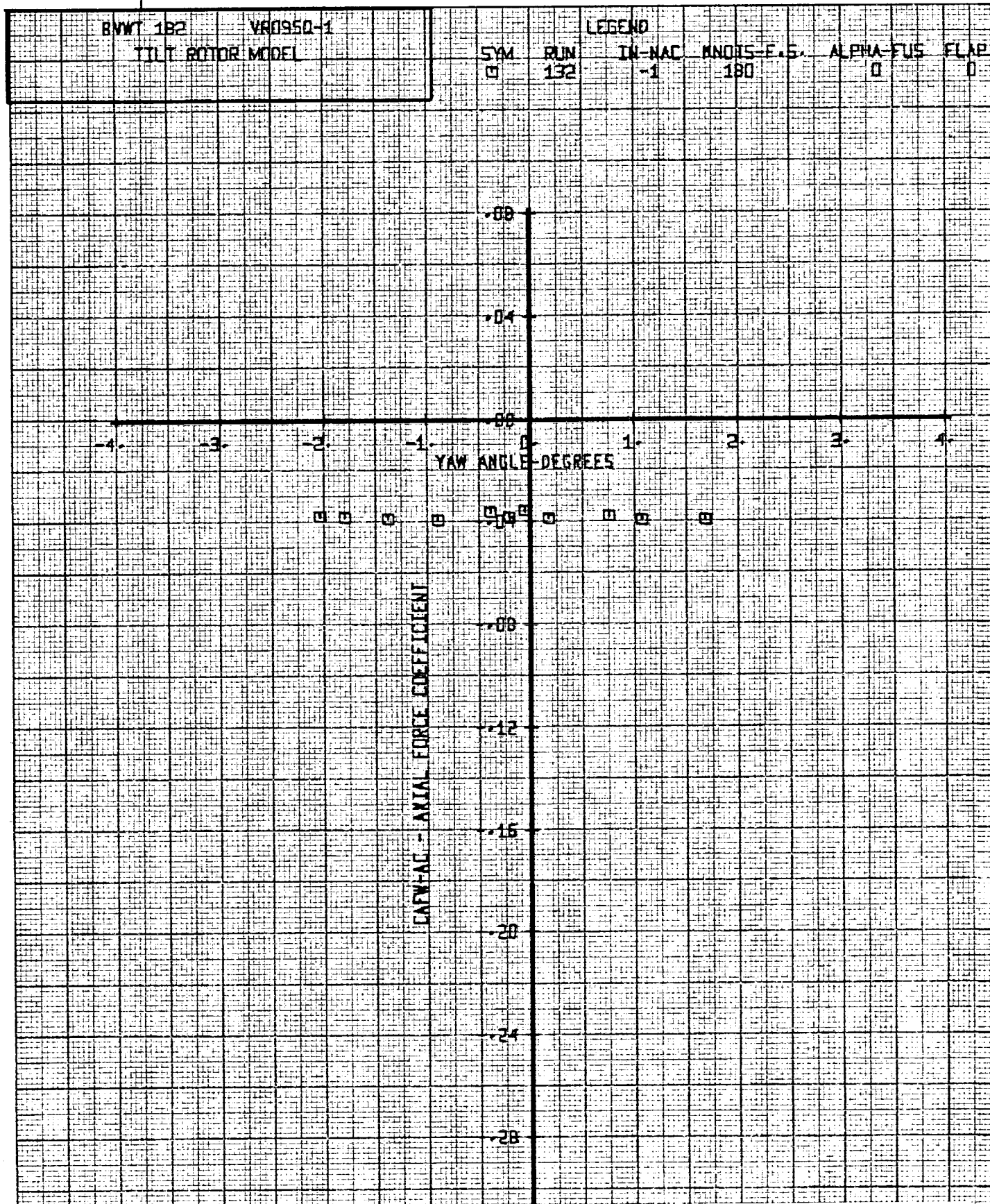


Figure 14-039. Aircraft Axial Force Coefficient Versus Yaw Angle
 ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

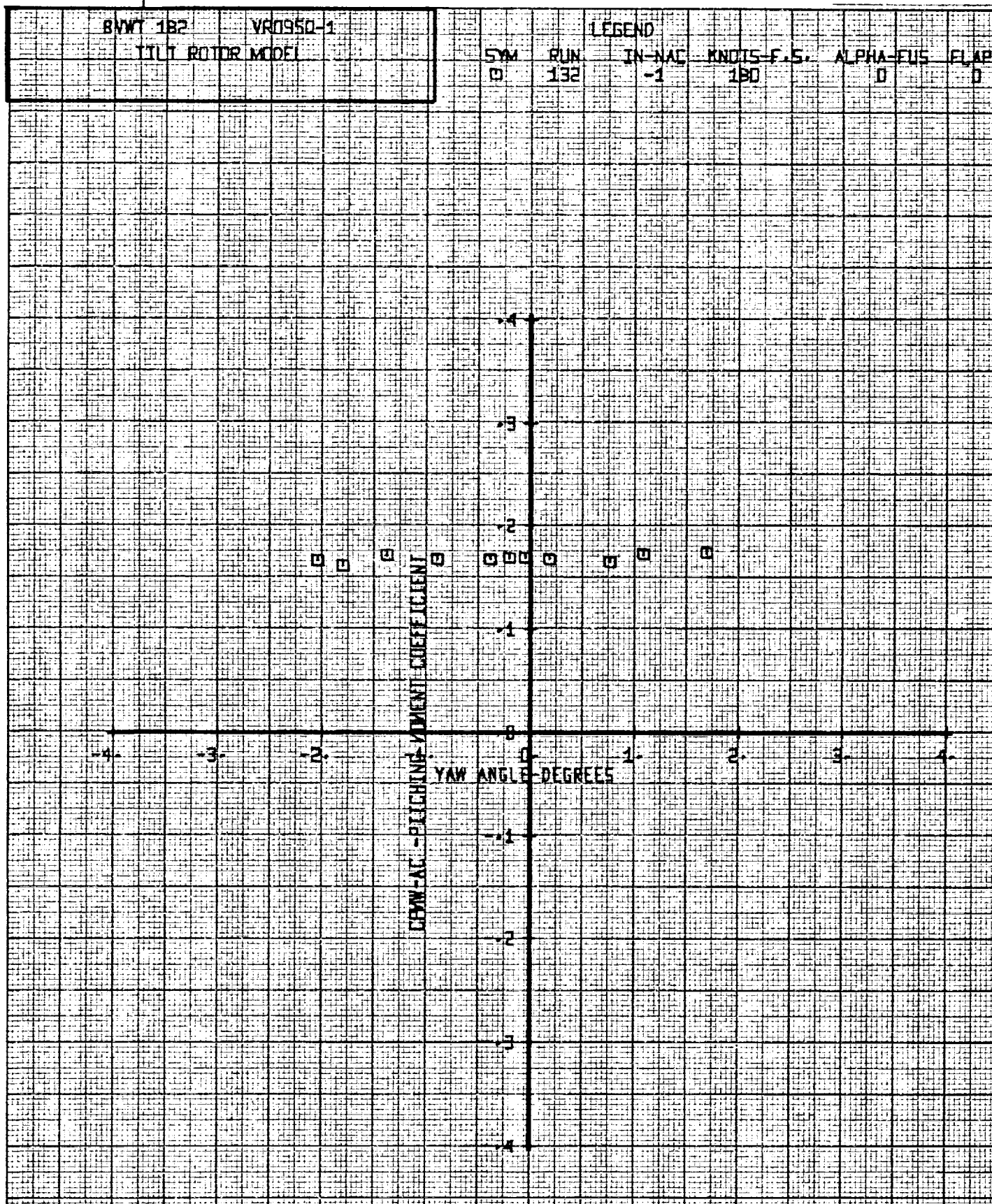


Figure 14-040. Aircraft Pitching Moment Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

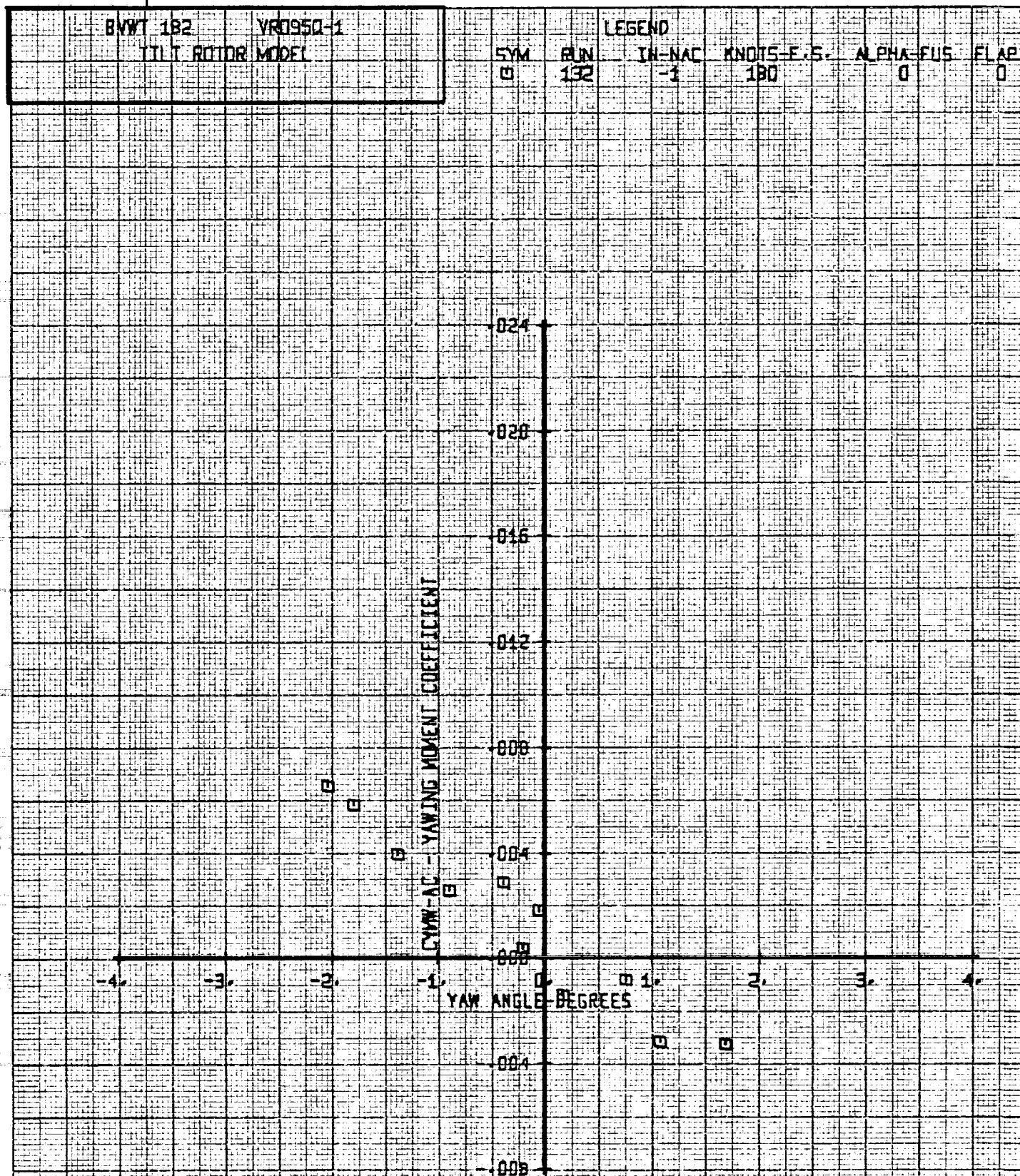


Figure 14-041. Aircraft Yawing Moment Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

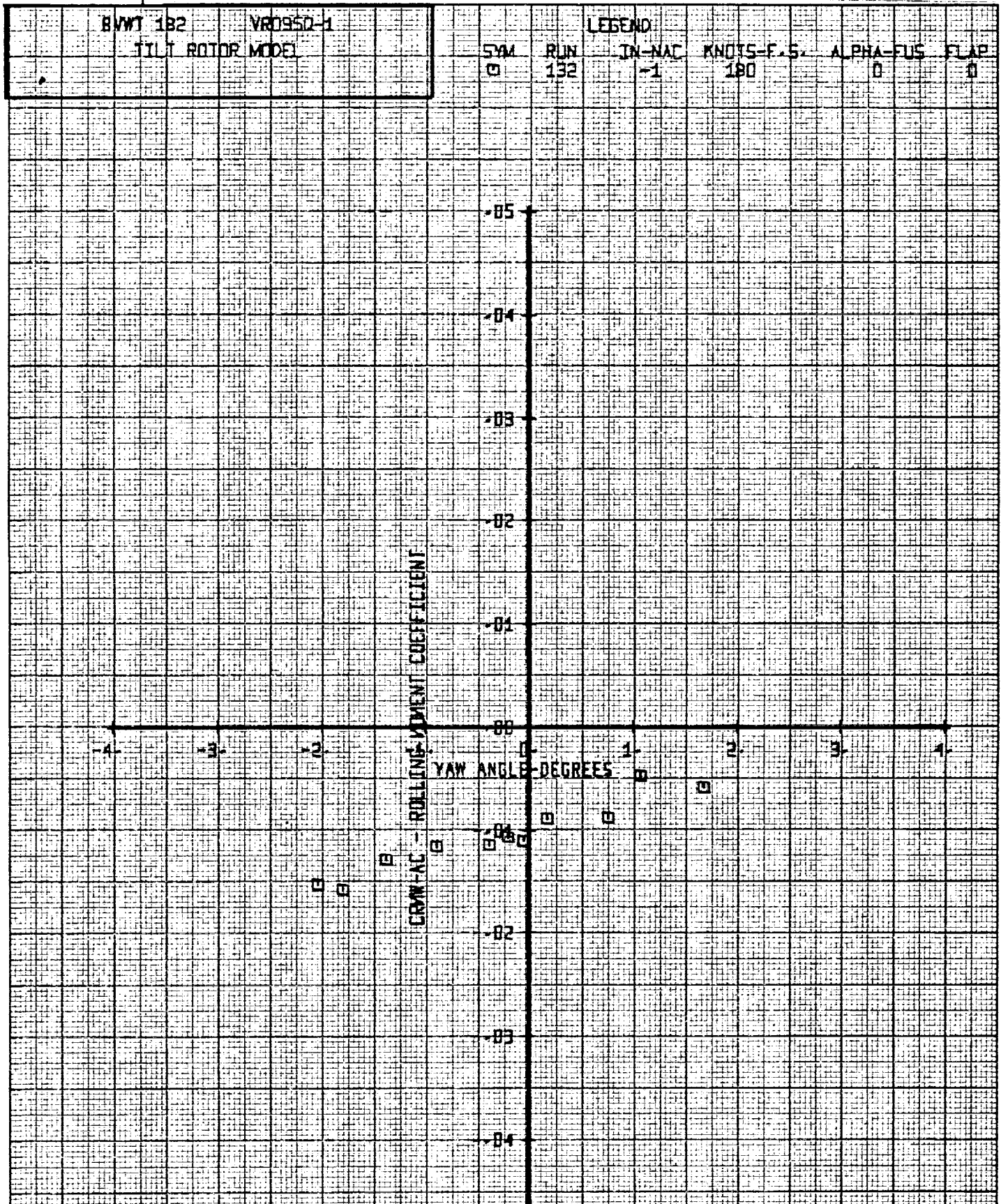


Figure 14-042. Aircraft Rolling Moment Versus Yaw Angle ~
 Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

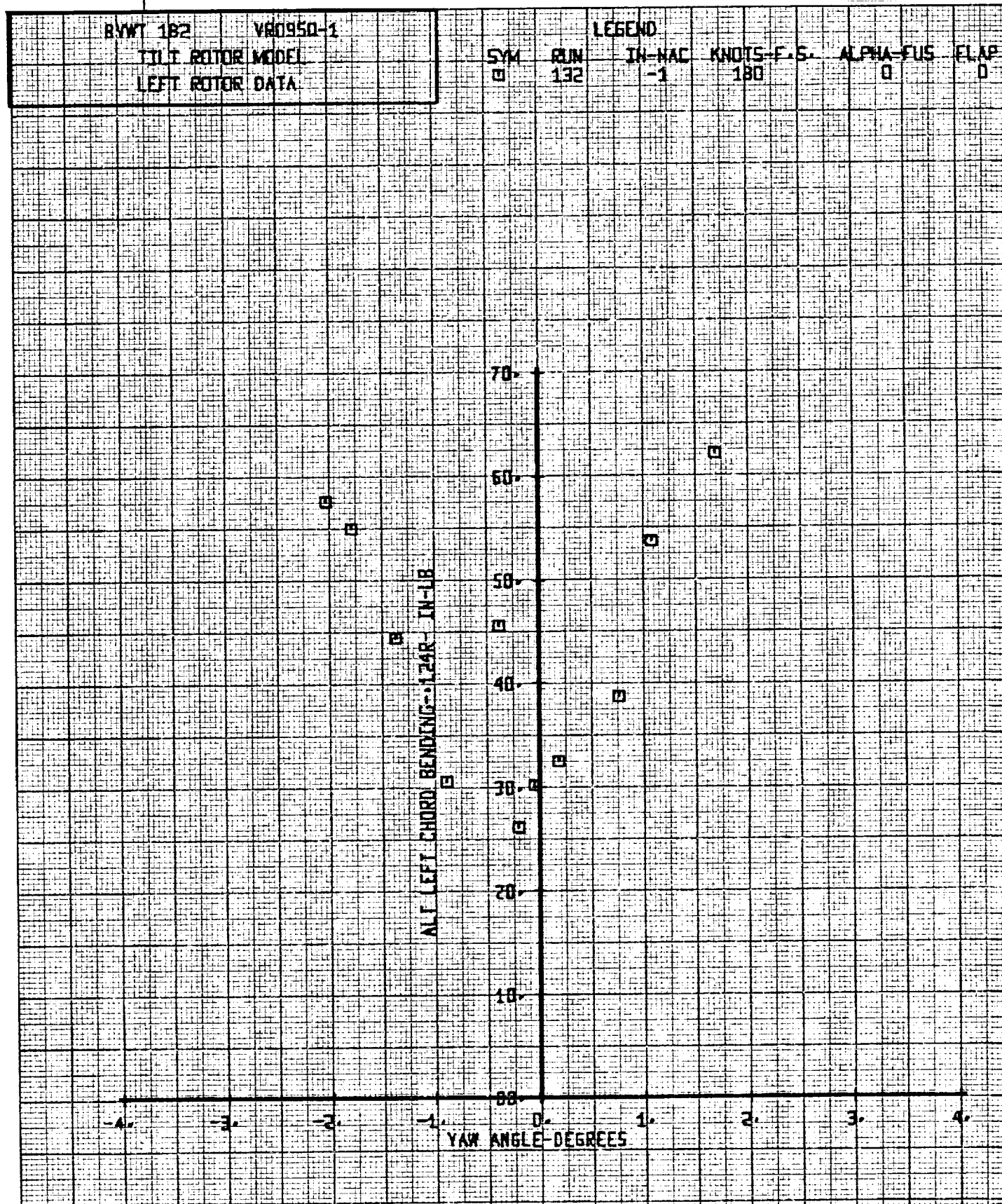


Figure 14-043. Alt. Left Chord Bending Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

BVWT 182 VR0950-1

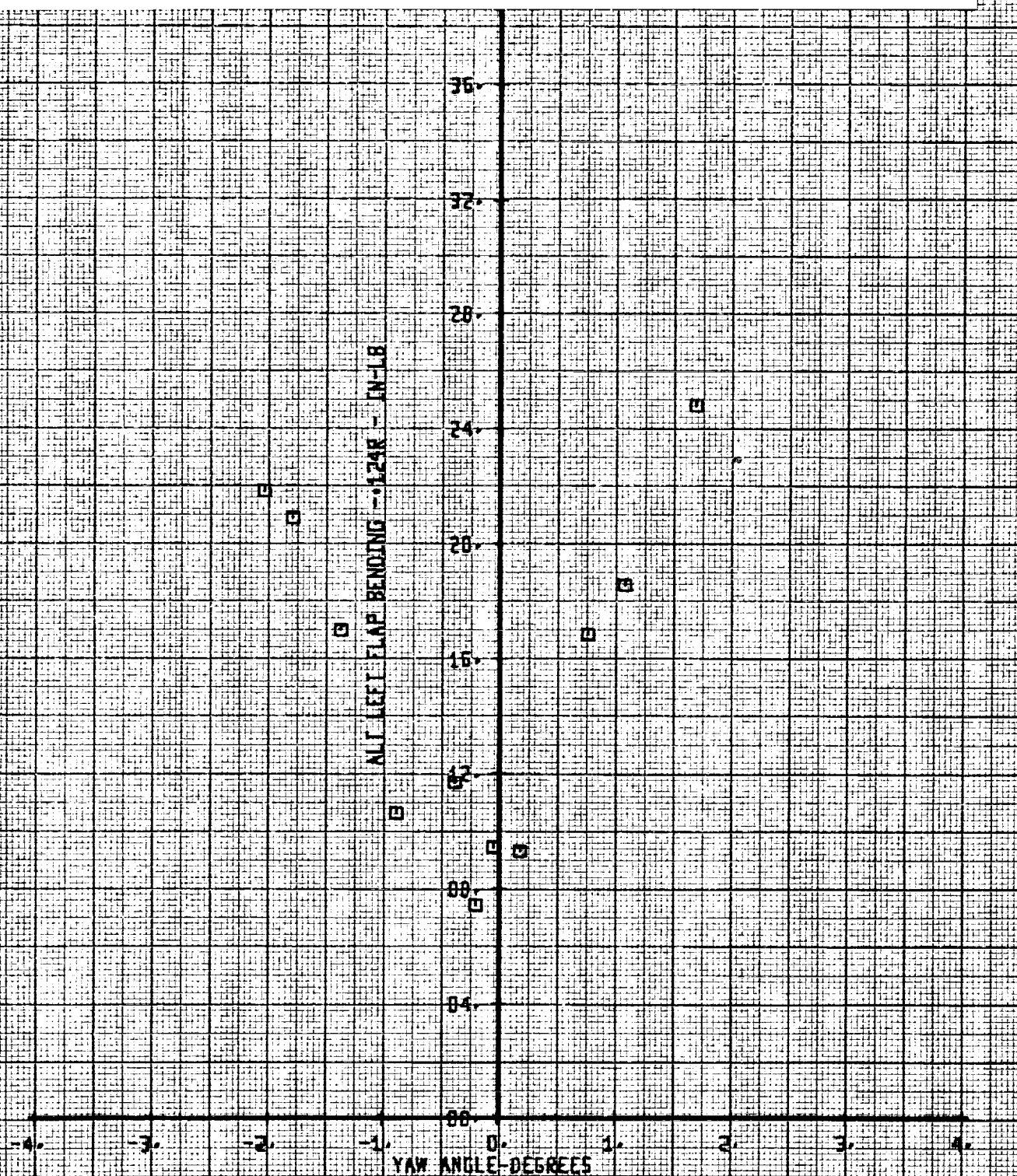
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM
□RUN
132IN-NAC
-1KNOTS-F.S.
180ALPHA-FUS
0FLAP
0

Figure 14-044. Alt. Left Flap Bending Versus Yaw Angle γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

132

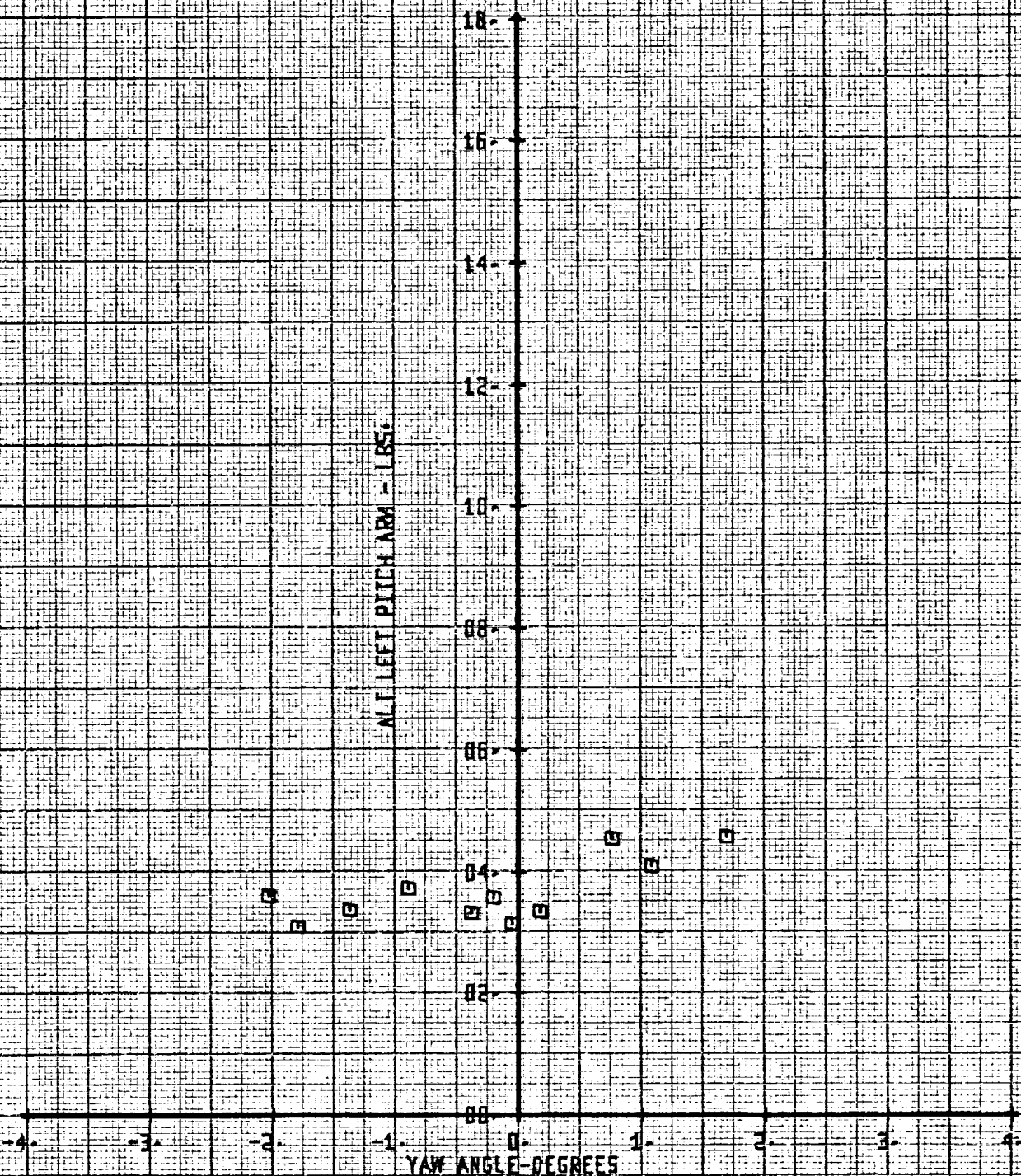
-1

180

0

0

Figure 14-045. Alt. Left Pitch Link Load Versus Yaw Angle ~
Degrees. IN = -1° Full Scale Airspeed 180 Knots.



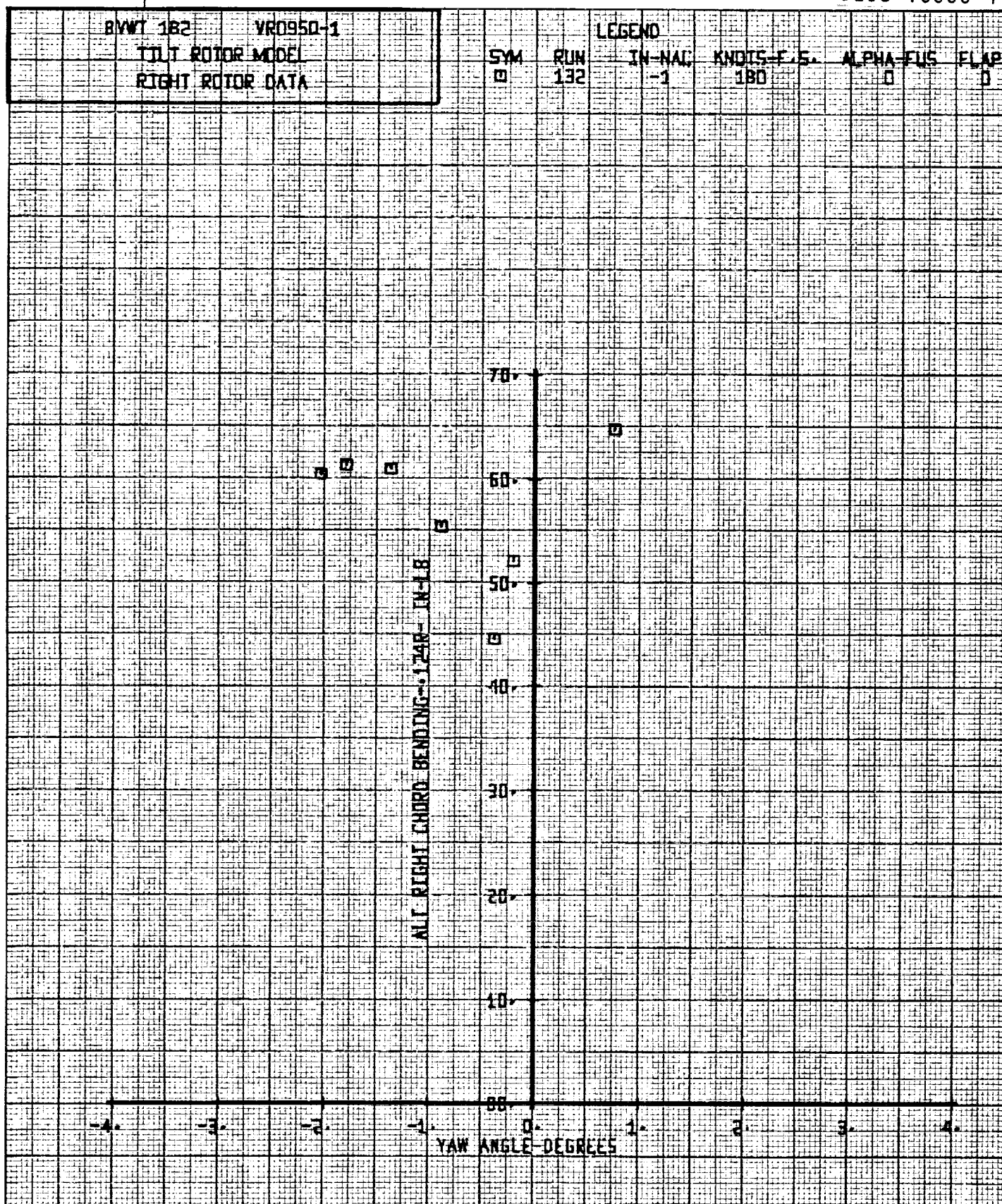


Figure 14-046. Alt. Right Chord Bending Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

BVWT 182 VR0950-1

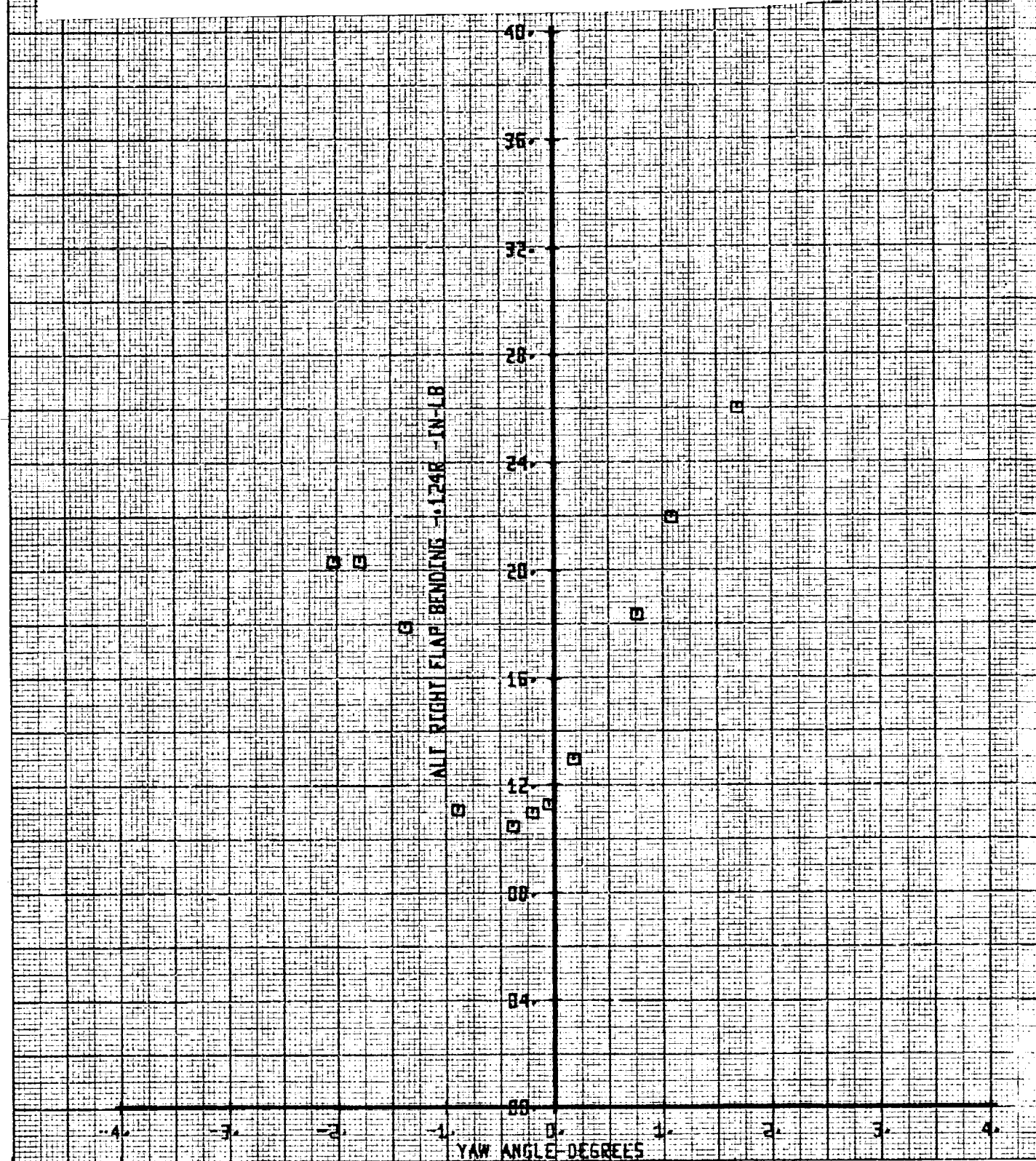
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	132	-1	180	0	0

Figure 14-047. Alt. Right Flap Bending Versus Yaw Angle γ
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



BVWT 182 YR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM

RUN

LEGEND

IN-NAC

KNOTS-F-5

ALPHA-FUS

FLAP

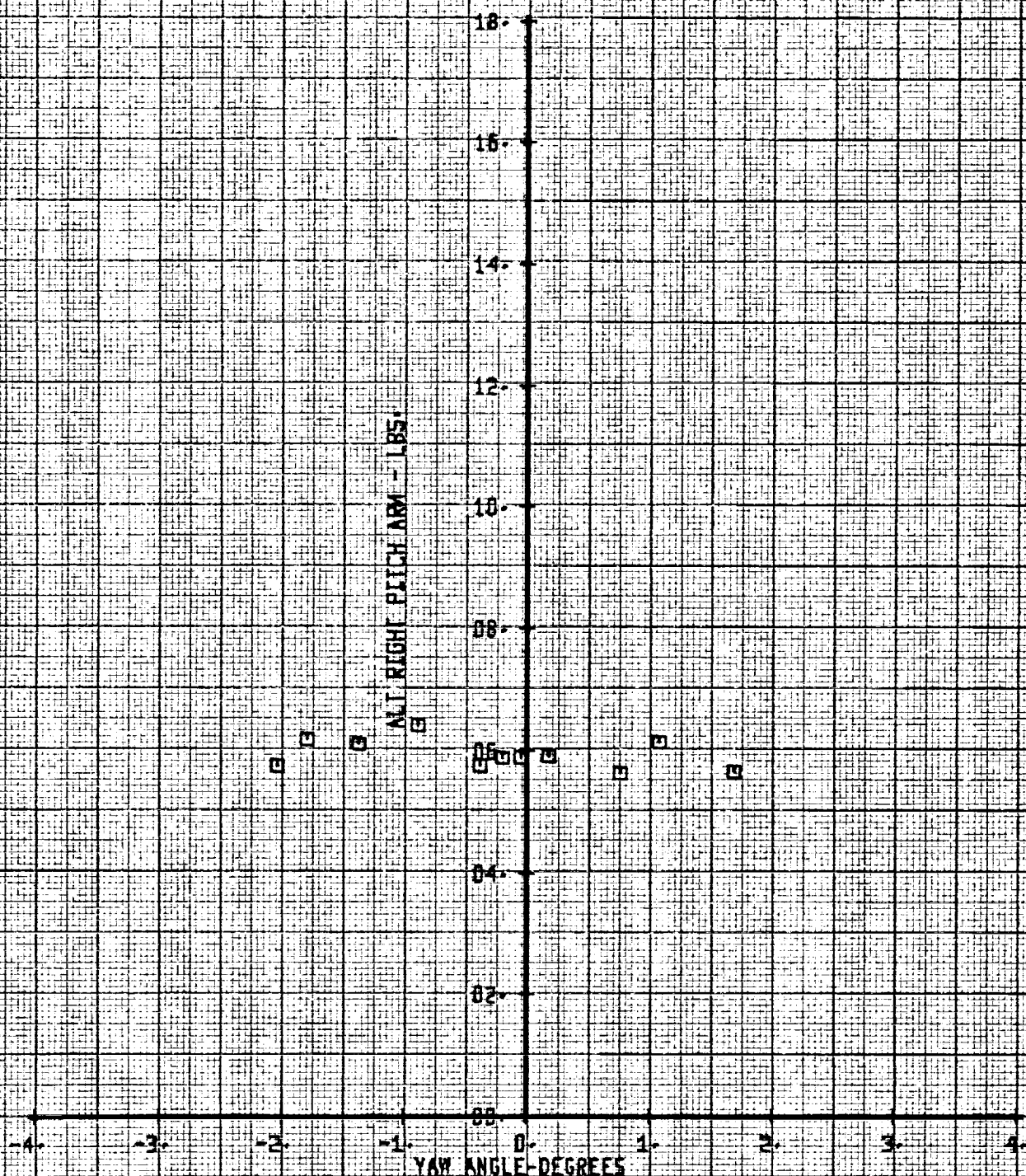
-1

180

0

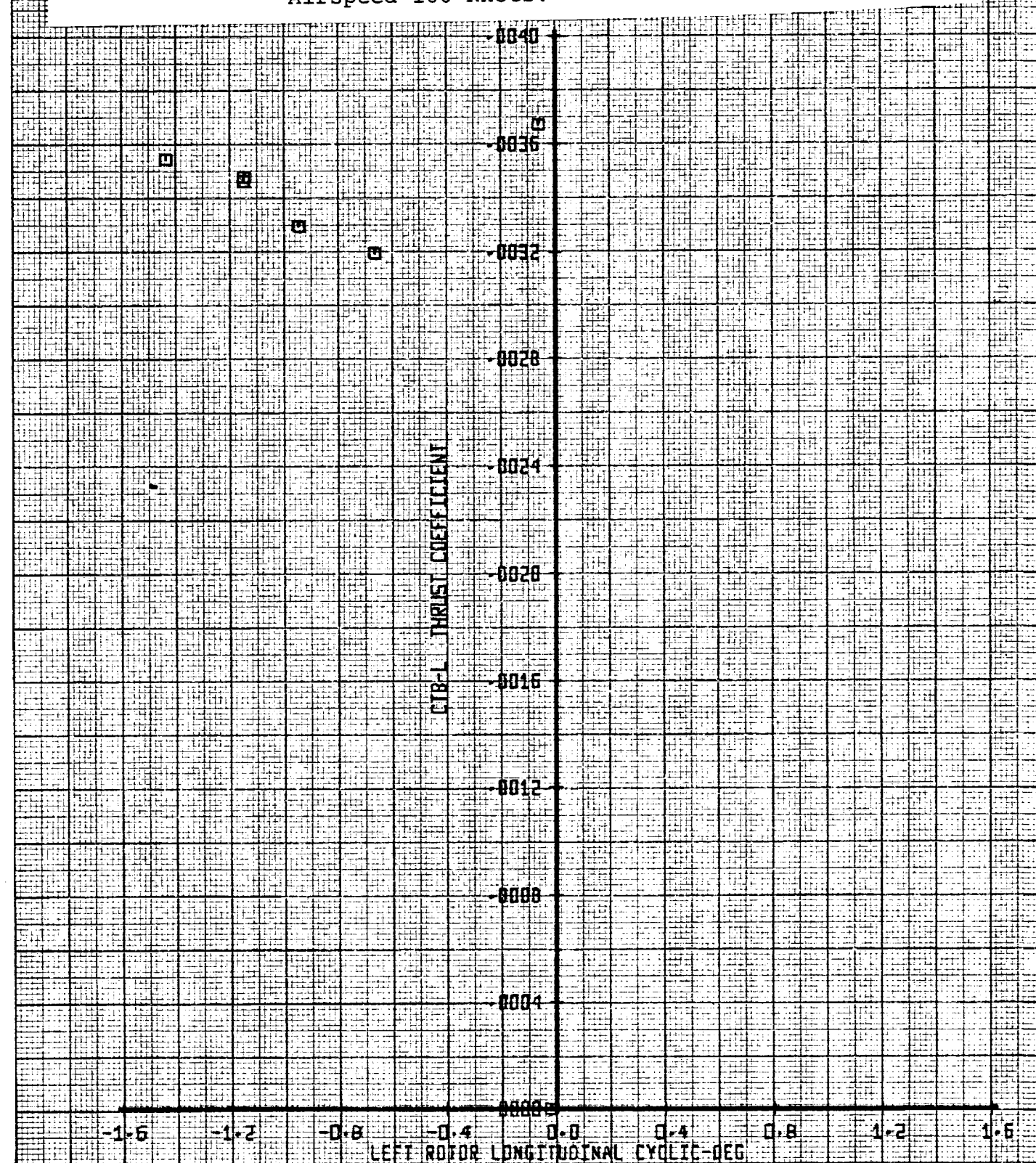
0

Figure 14-048. Alt. Right Pitch Link Load Versus Yaw Angle γ
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



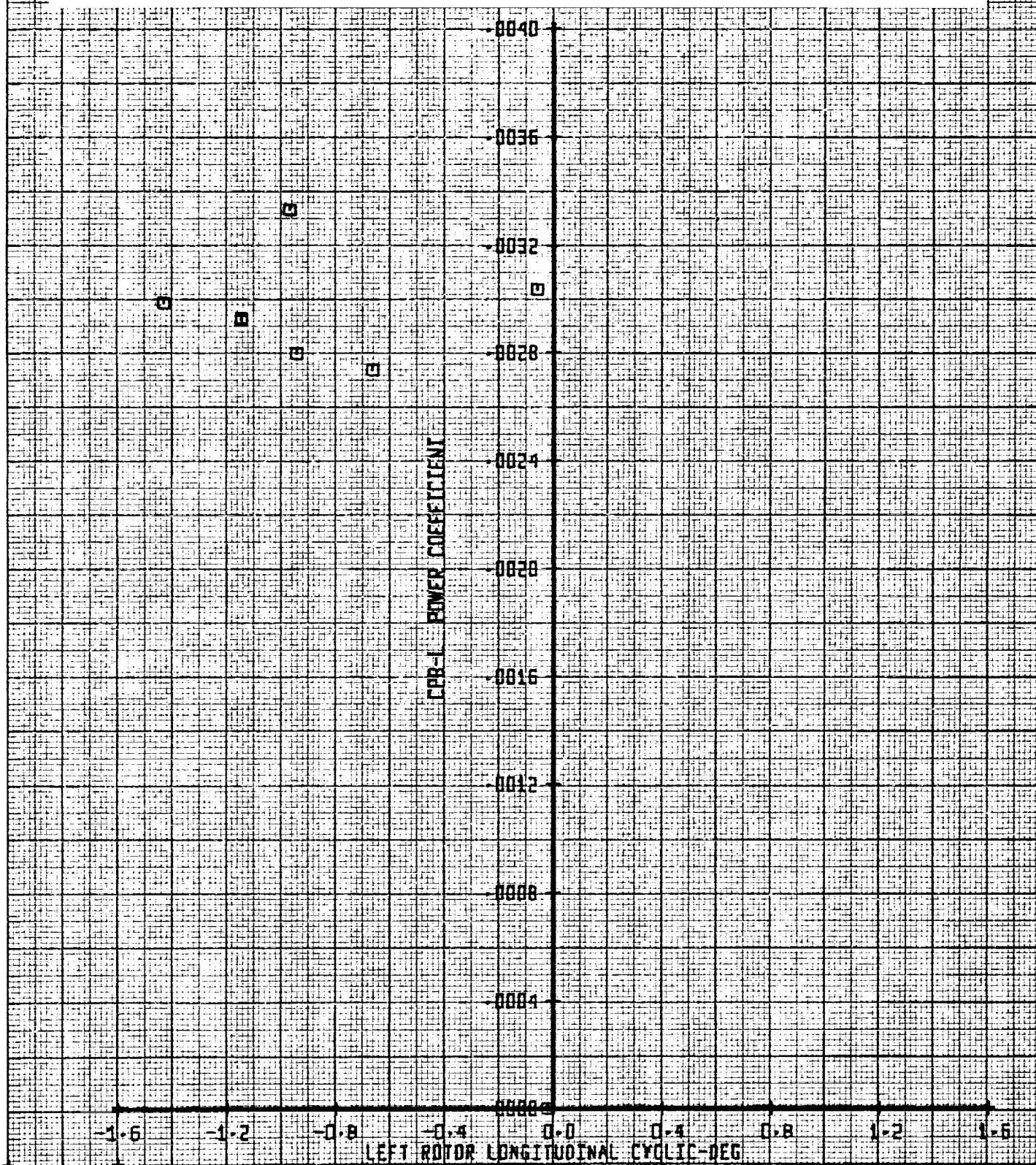
BNWT 182	VR0950-1	LEGEND				
TILT ROTOR MODEL		SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS
LEFT ROTOR DATA		□	134	-1	180	0
						FLAP
						0

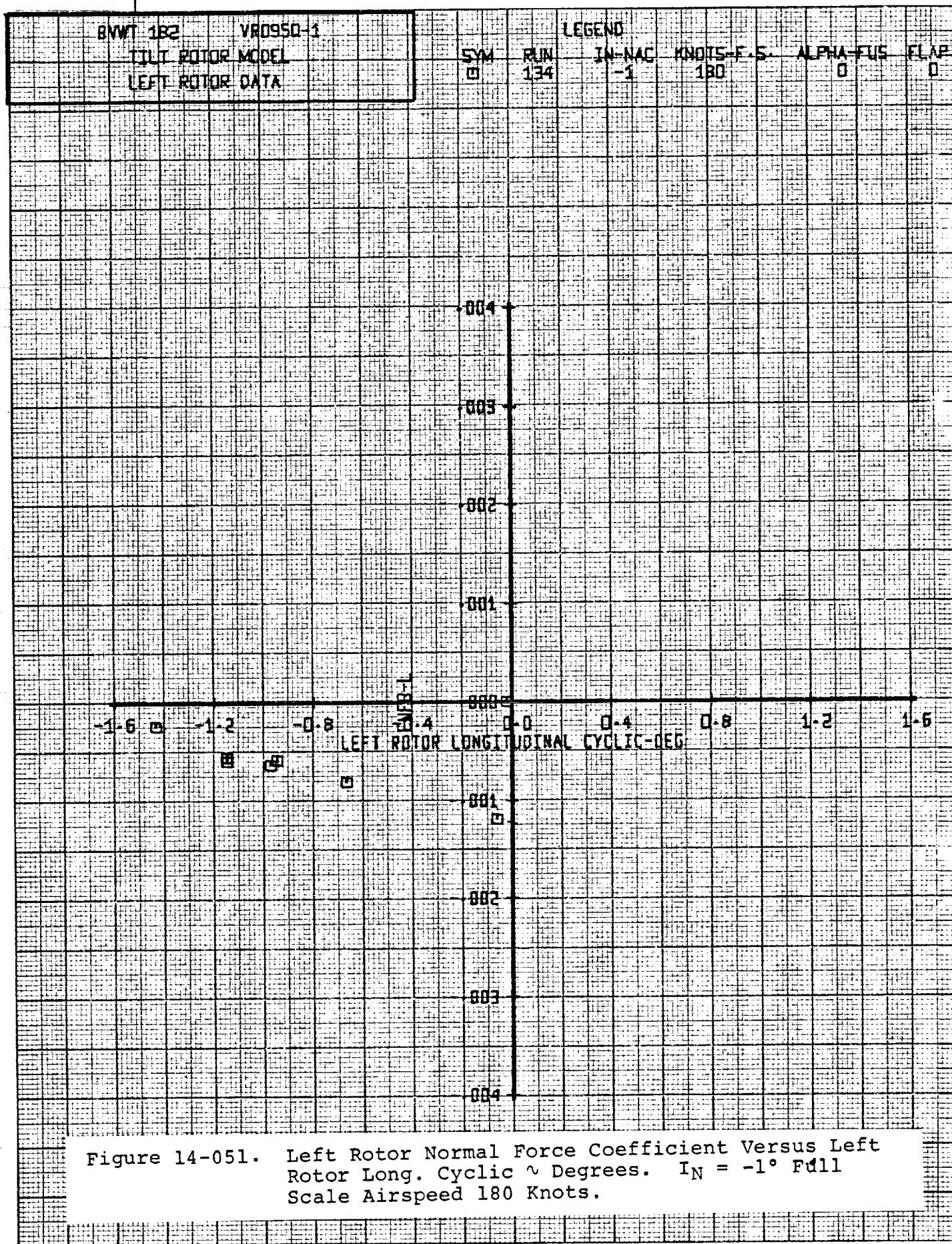
Figure 14-049. Left Rotor Thrust Coefficient Versus Left Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 180 Knots.



BWVT 182		VR0950-1		LEGEND				
TILT ROTOR MODE		SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FLTS	FLAP	
LEFT ROTOR DATA		D	134	-1	180	0	0	

Figure 14-050. Left Rotor Power Coefficient Versus Left Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.





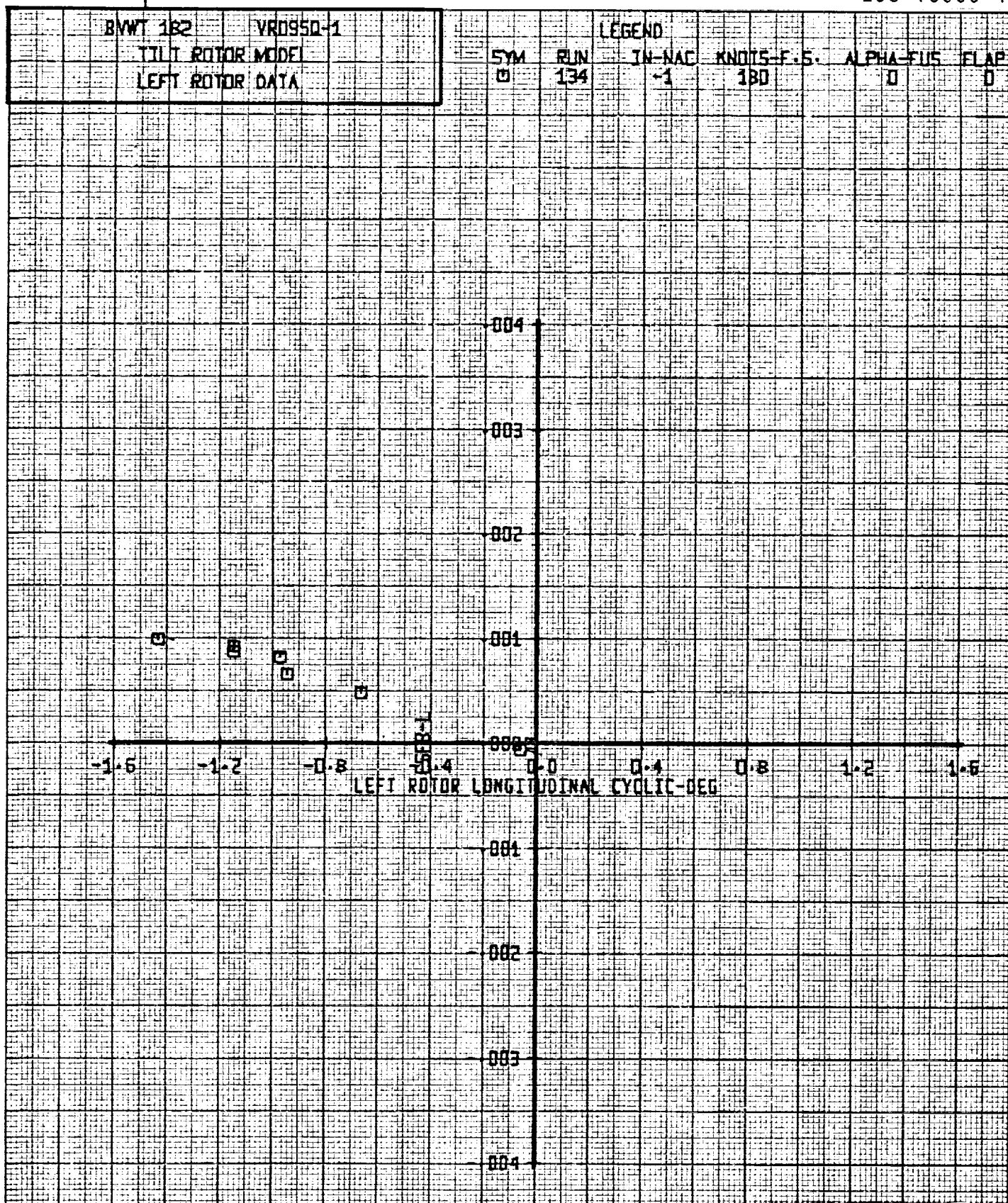


Figure 14-052. Left Rotor Side Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

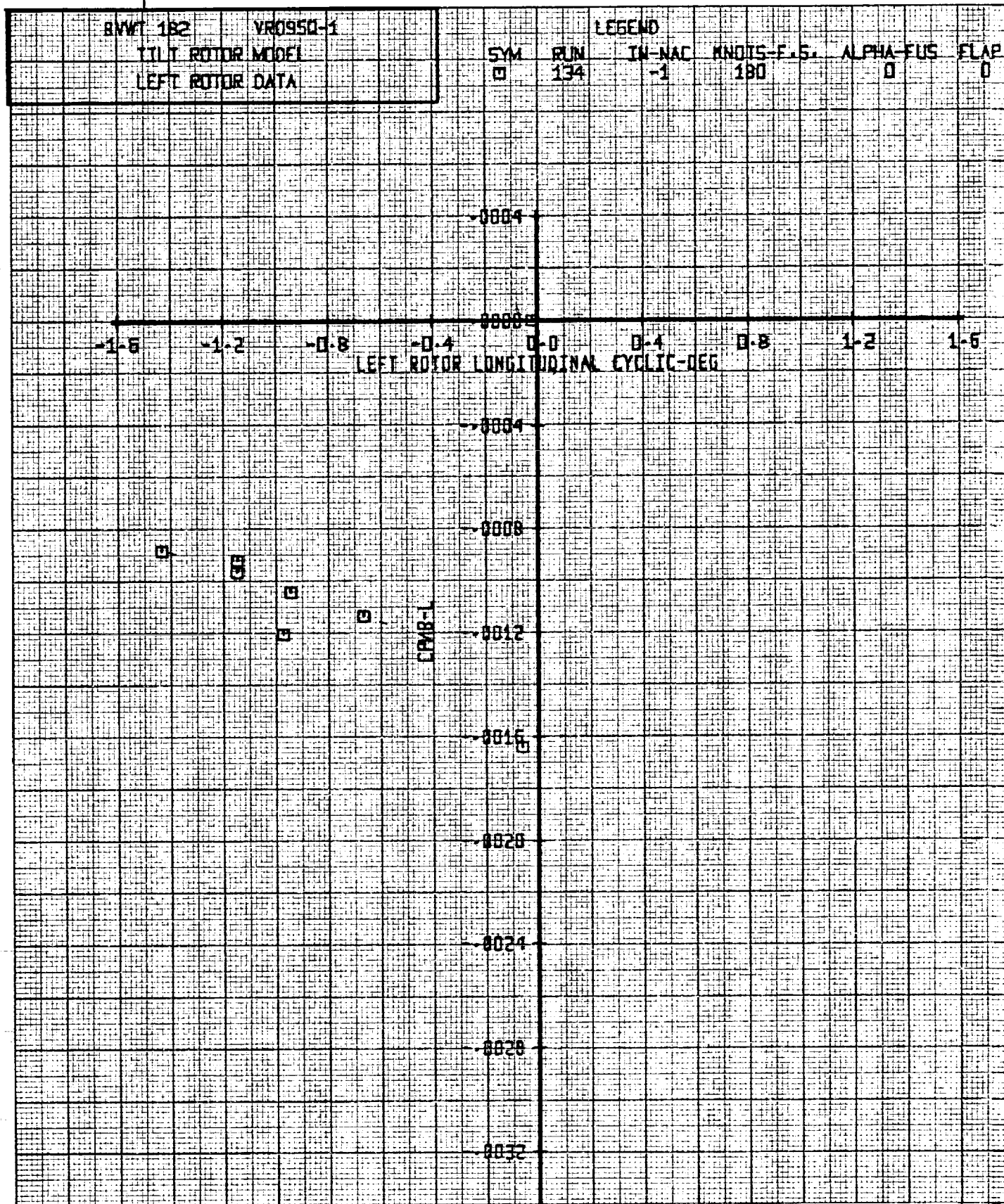


Figure 14-053. Left Rotor Pitching Moment Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

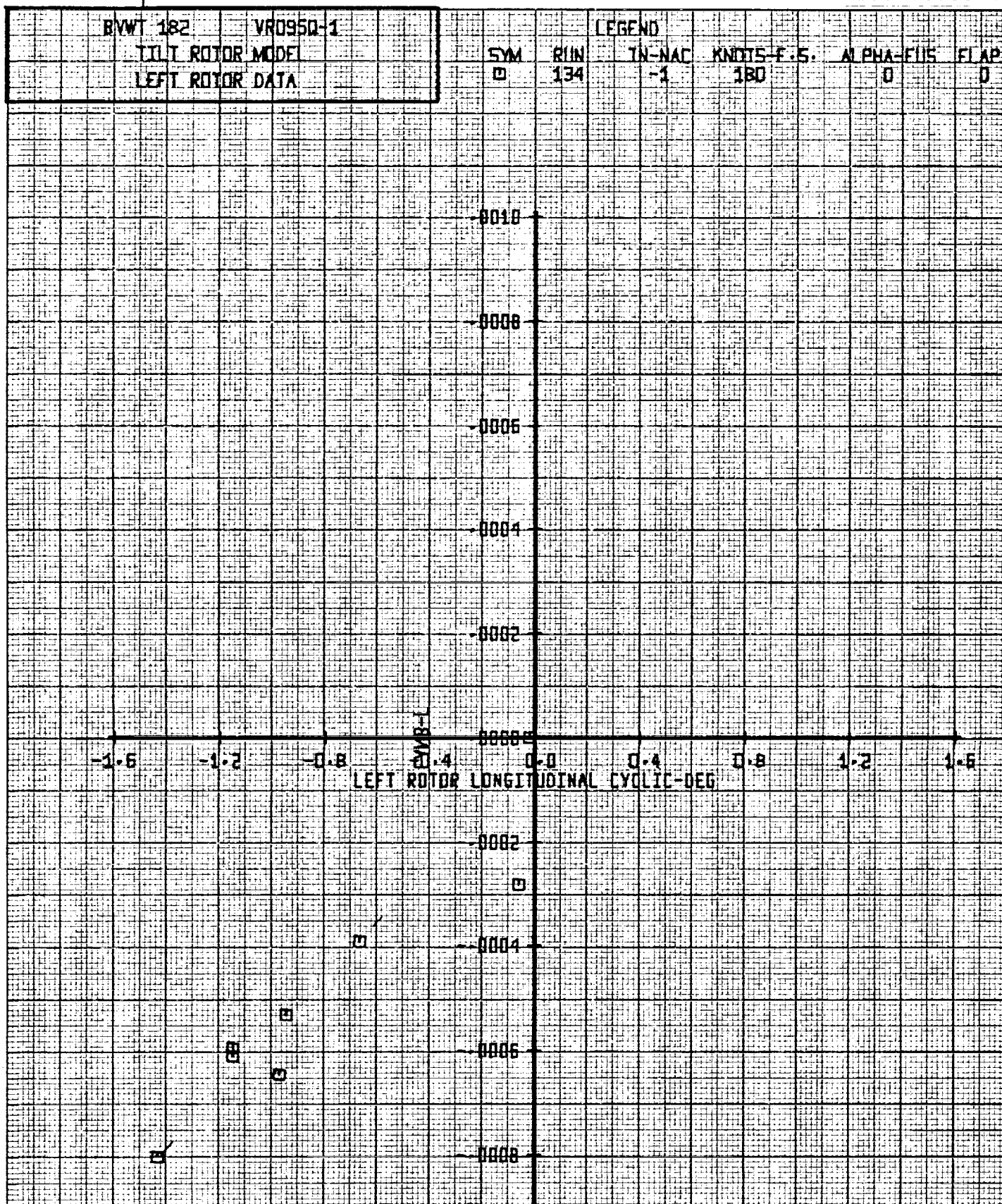


Figure 14-054. Left Rotor Yawing Moment Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

BVWT 182 VR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM

□

RUN

134

LEGEND

IN-NAC

-1

KNOTS-F.S.

180

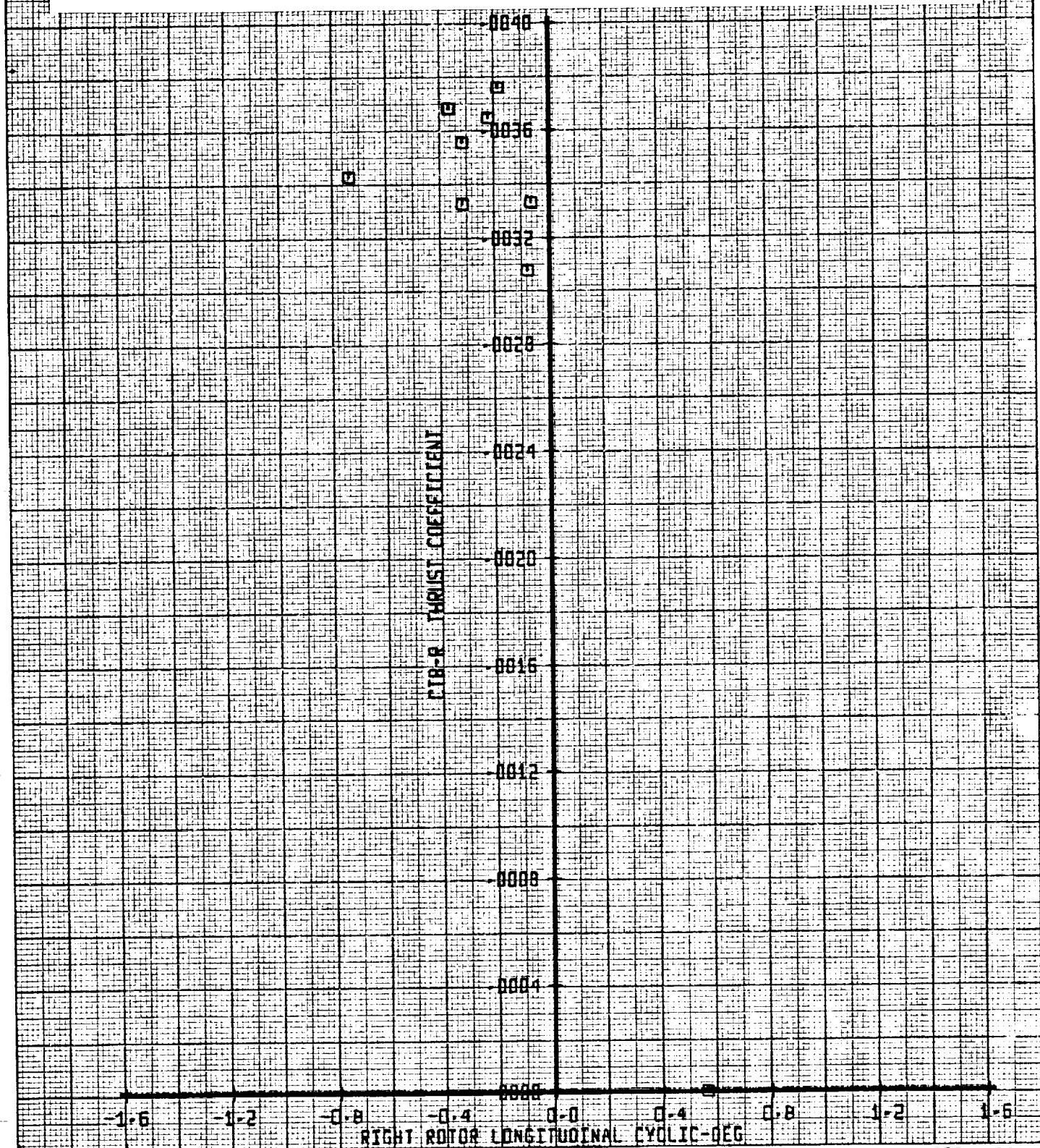
ALPHA-DEG

0

FLAP

0

Figure 14-055. Right Rotor Thrust Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



BVWT 182 VR0950-1

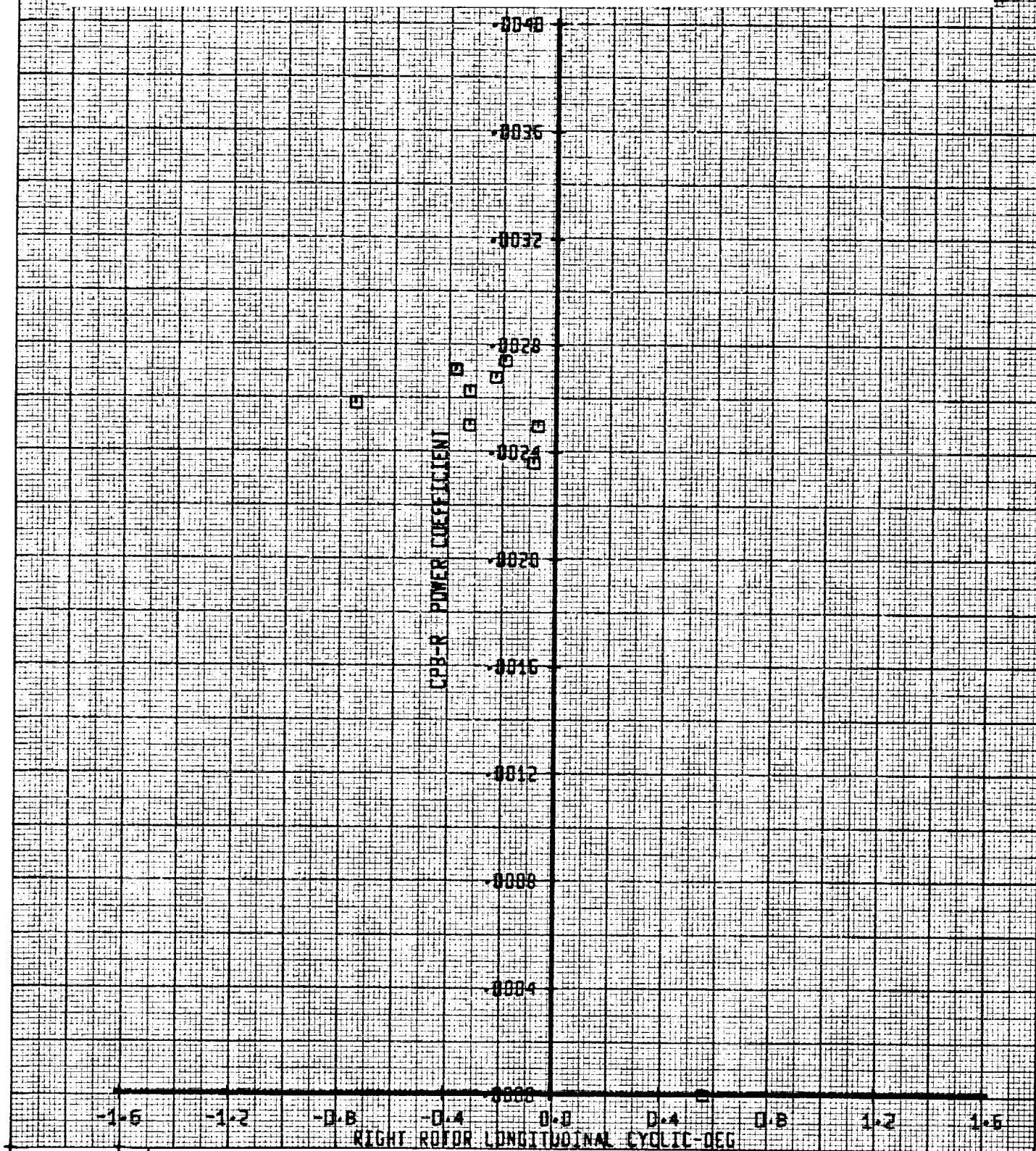
TILT ROTOR MODEL

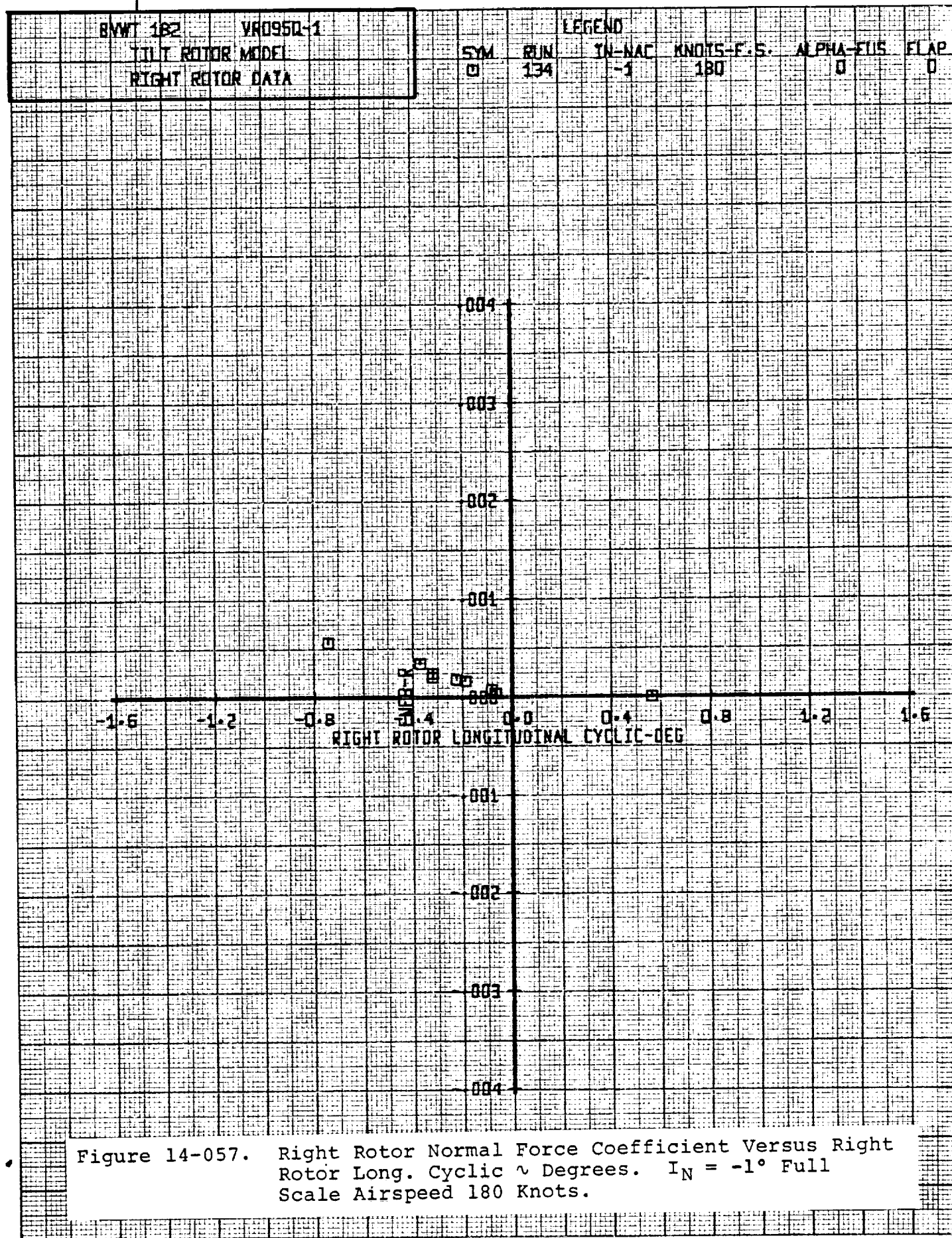
RIGHT ROTOR DATA

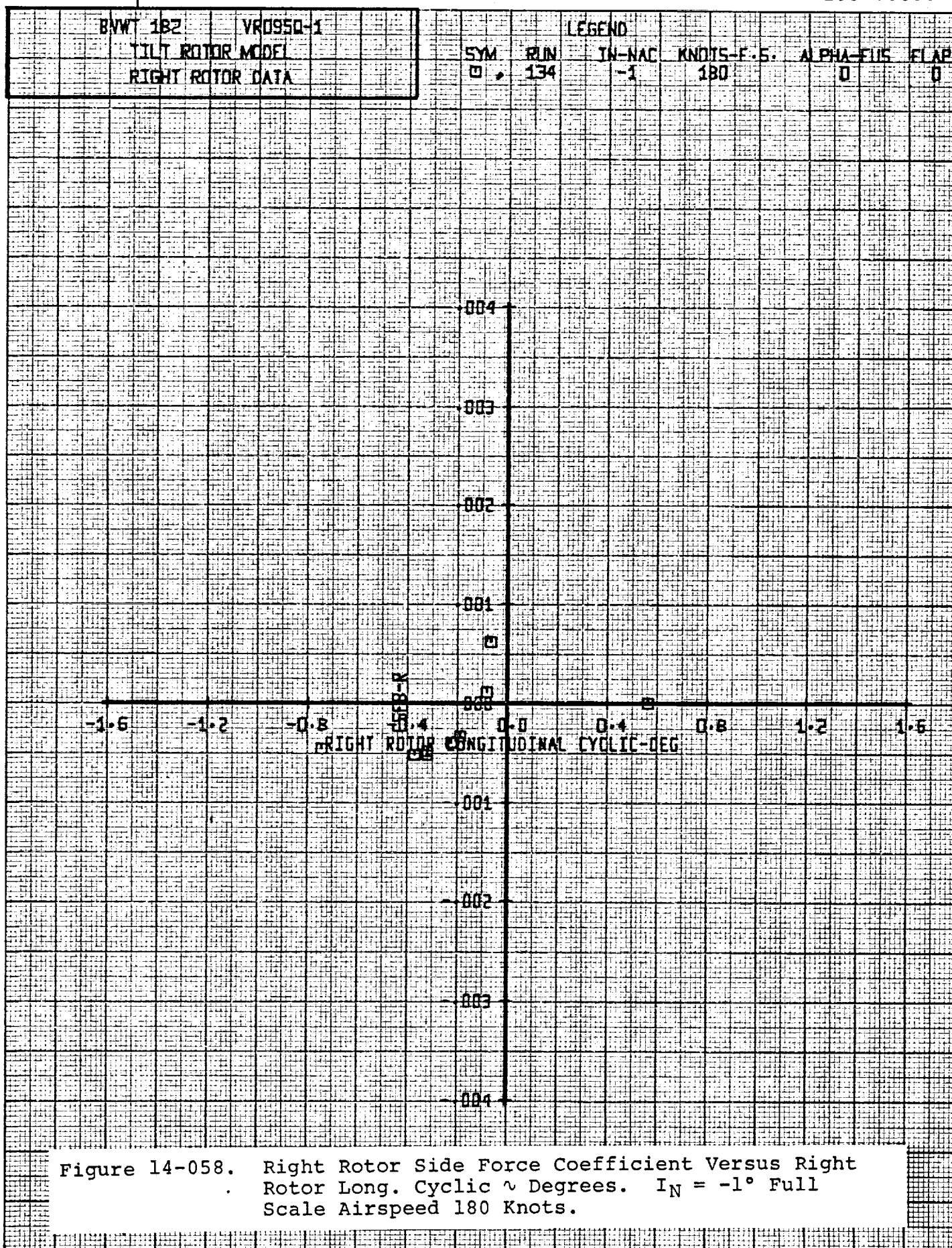
LEGEND

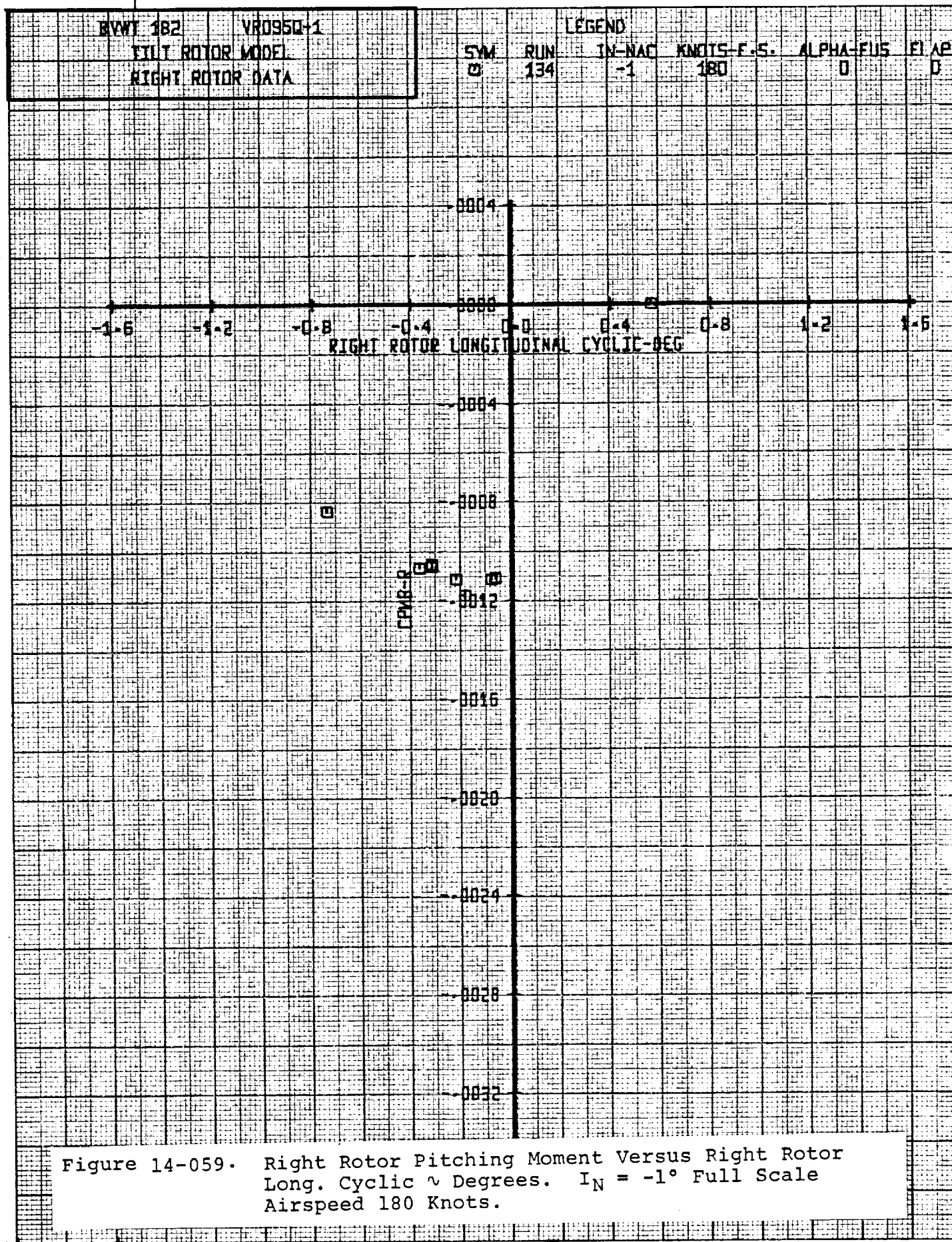
SYM
□RUN
134IN-NAC
-1KNOTS-F.S.
180ALPHA-FUS
0FLAP
0

Figure 14-056. Right Rotor Power Coefficient Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 180 Knots.









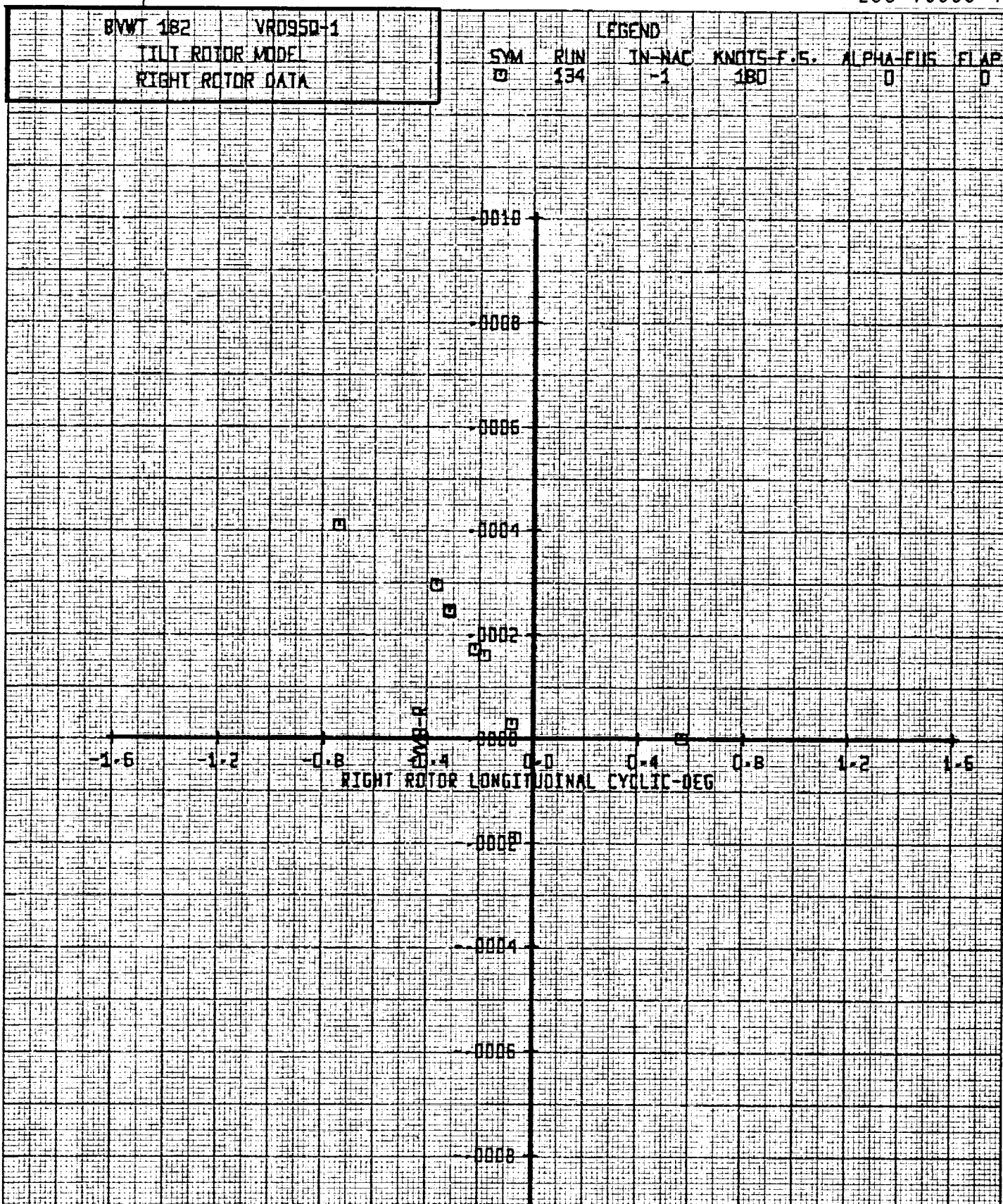


Figure 14-060. Right Rotor Yawing Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

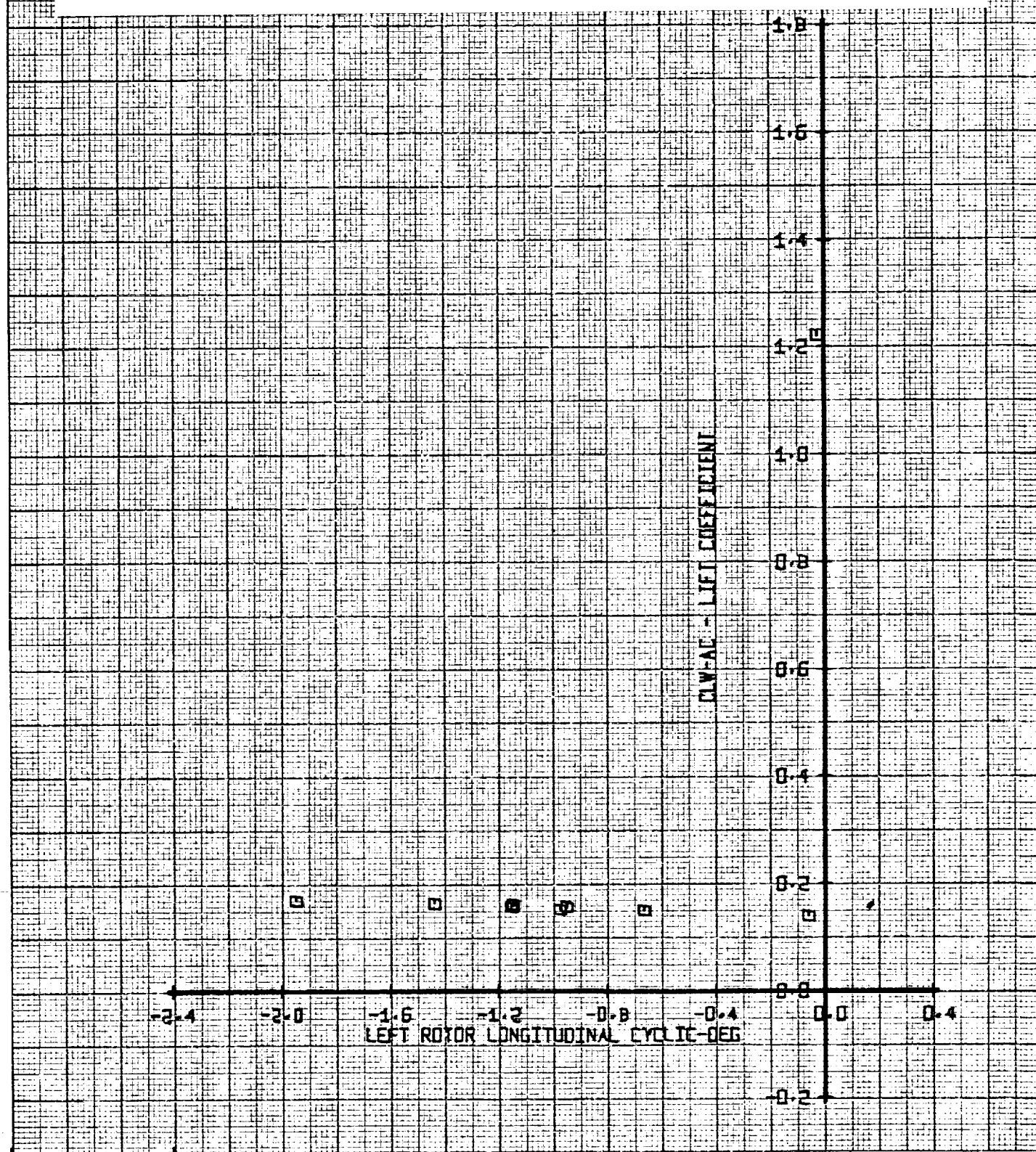
BYWT 182 VR0950-1

TILT ROTOR MODEL

LEGEND

SYM
□RUN
134IN-NAC
-1KNOTS-F.S.
180ALPHA-FUS
0FLAP
0

Figure 14-061. Aircraft Lift Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



BWWT 182 VR7950-1
TILT ROTOR MODEL

LEGEND

SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
0 134 -1 180 0 0

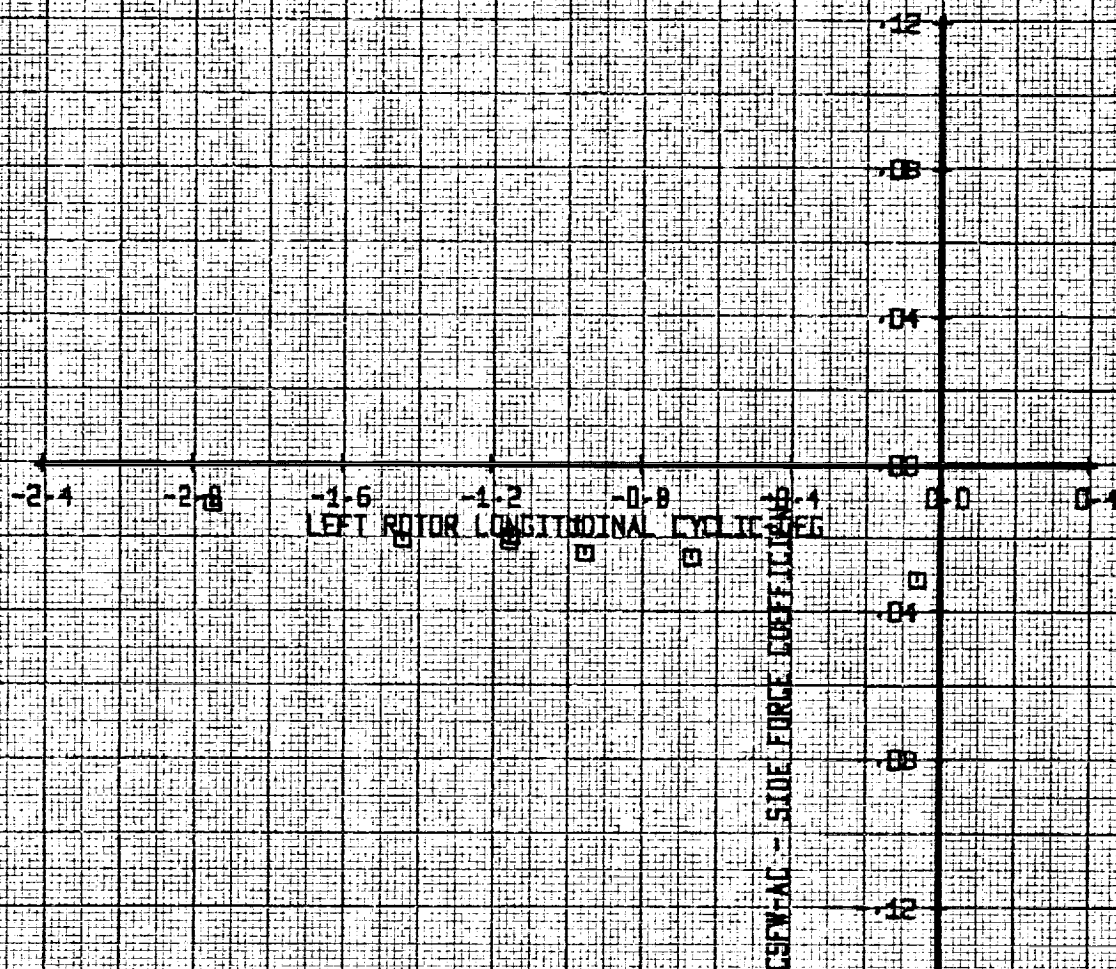
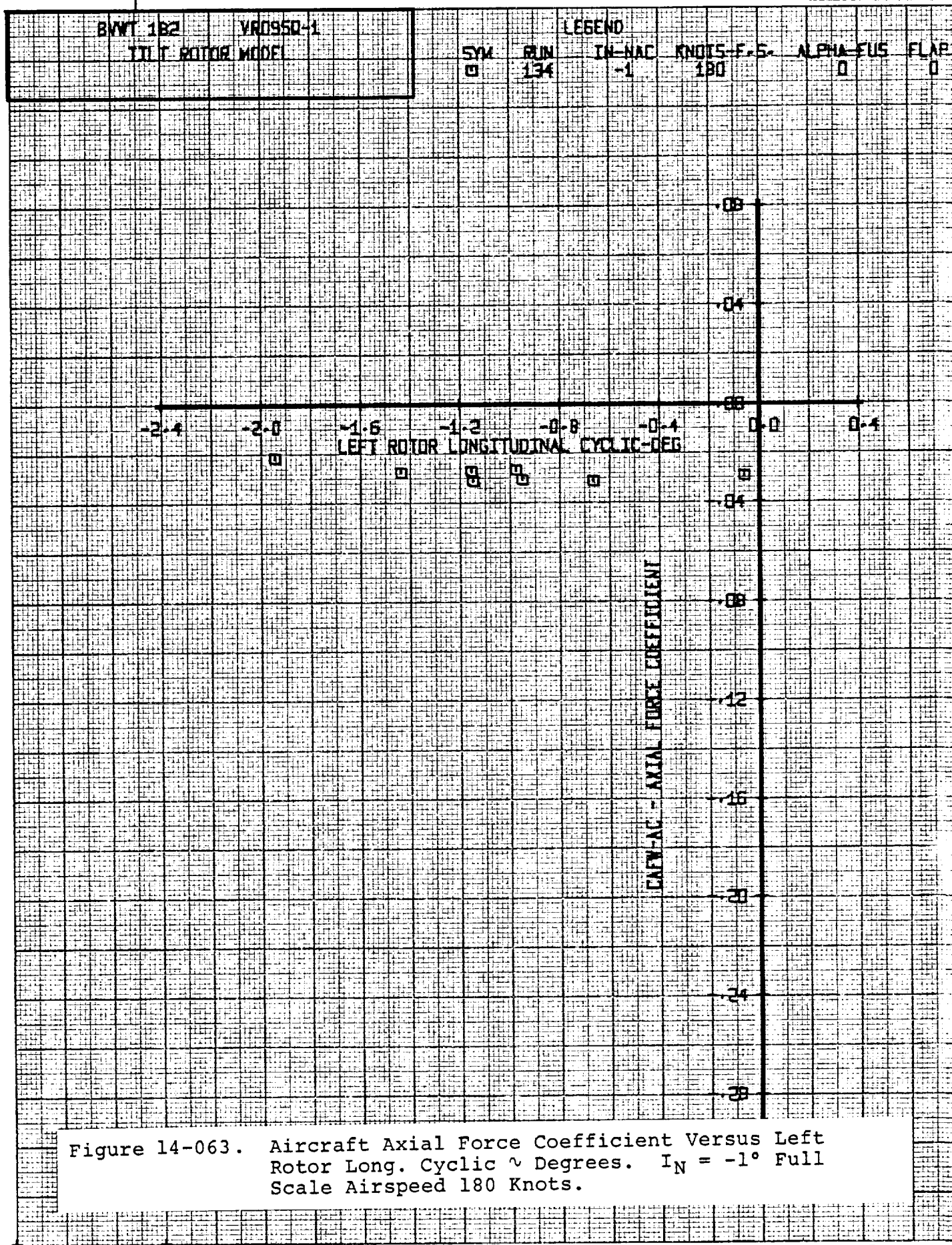
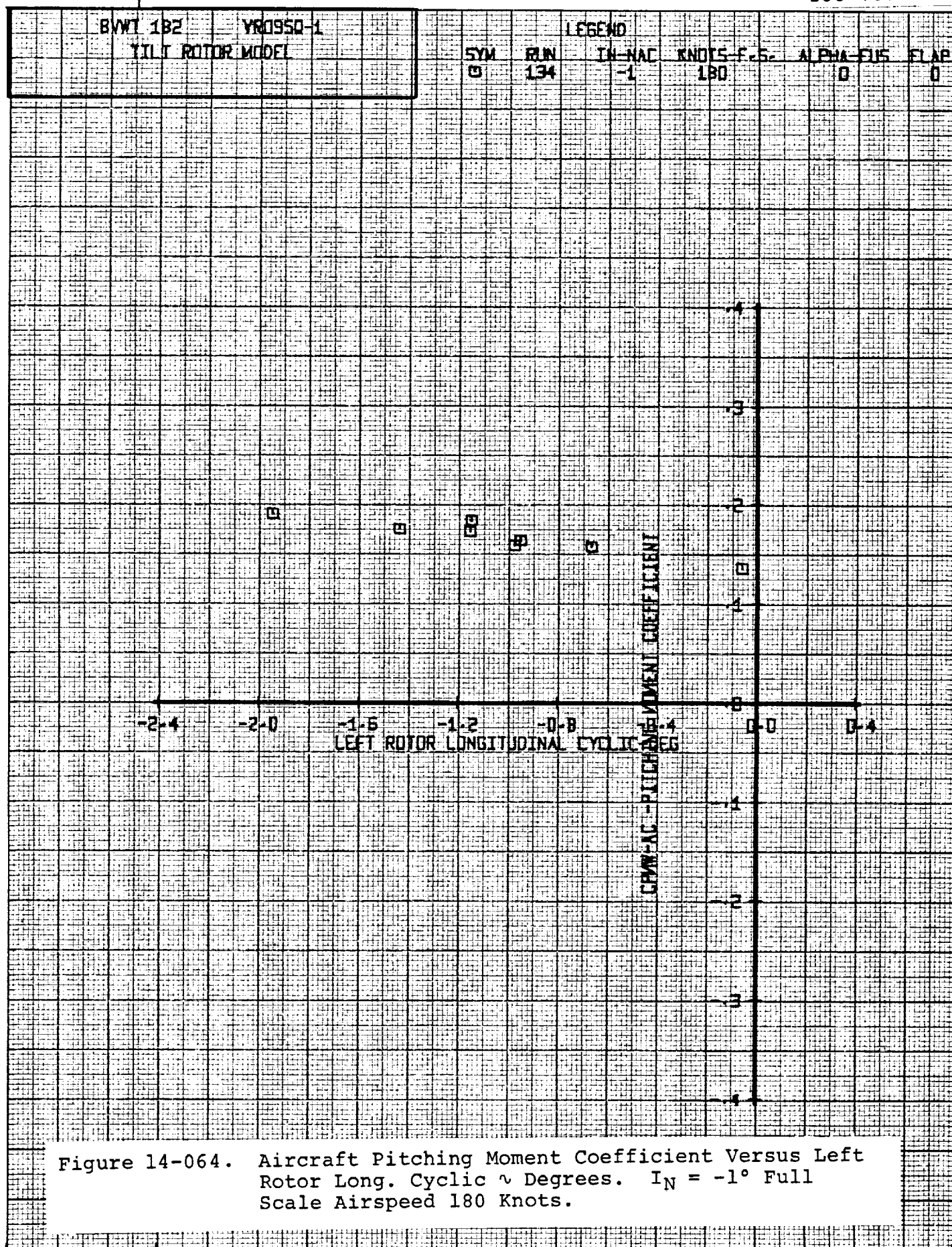


Figure 14-062. Aircraft Side Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.





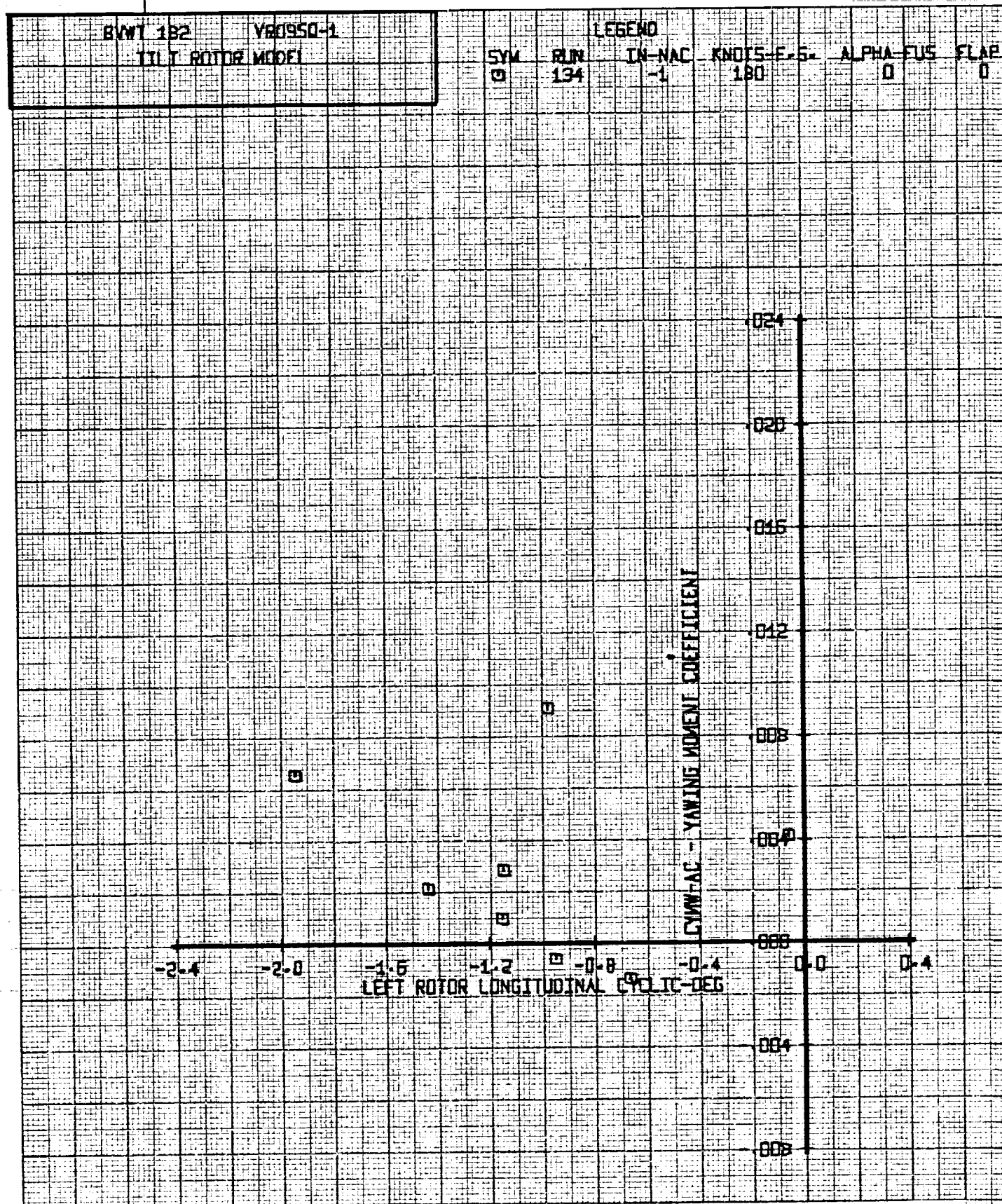


Figure 14-065. Aircraft Yawing Moment Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

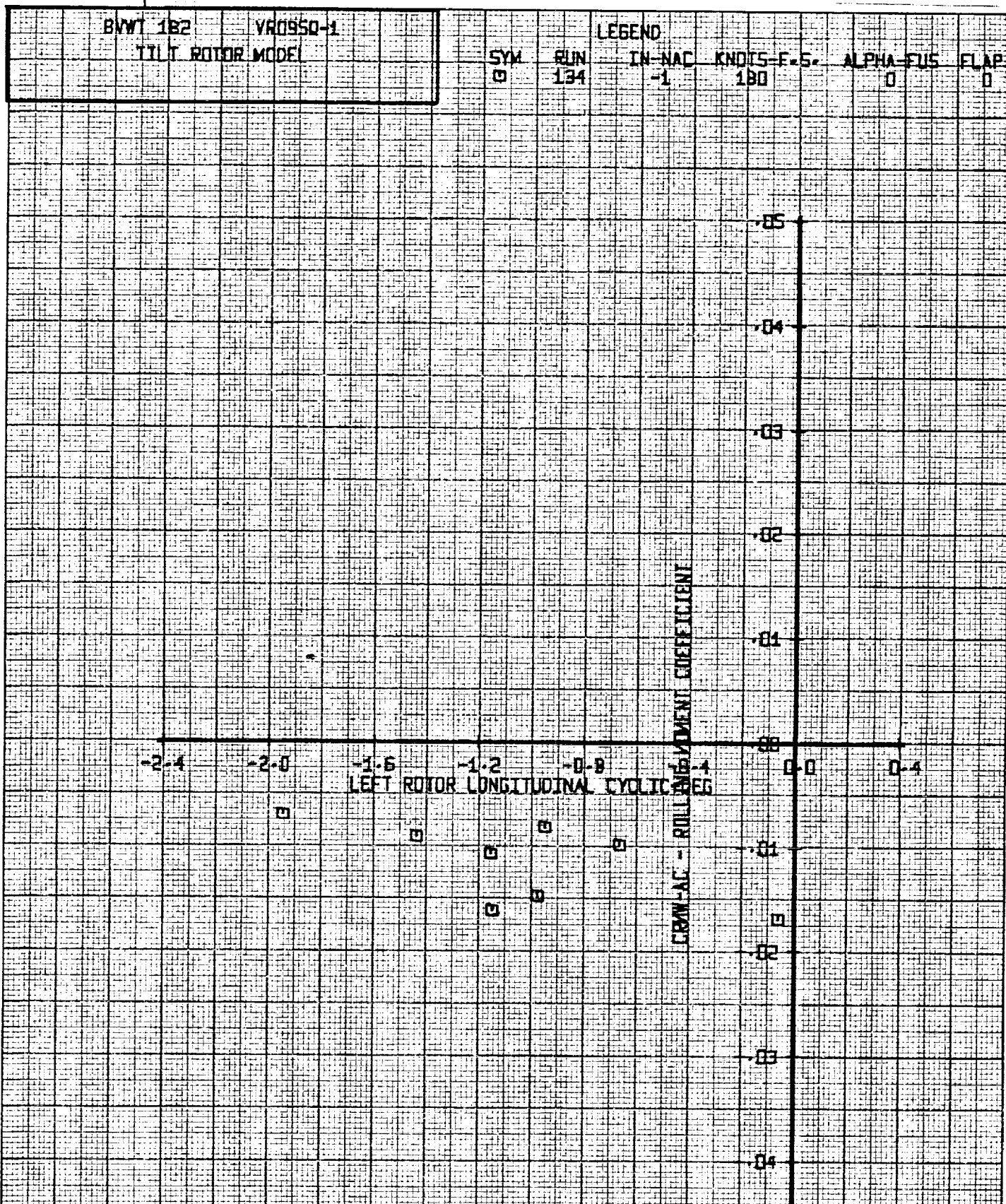


Figure 14-066. Aircraft Rolling Moment Coefficient Versus Left Rotor Long. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

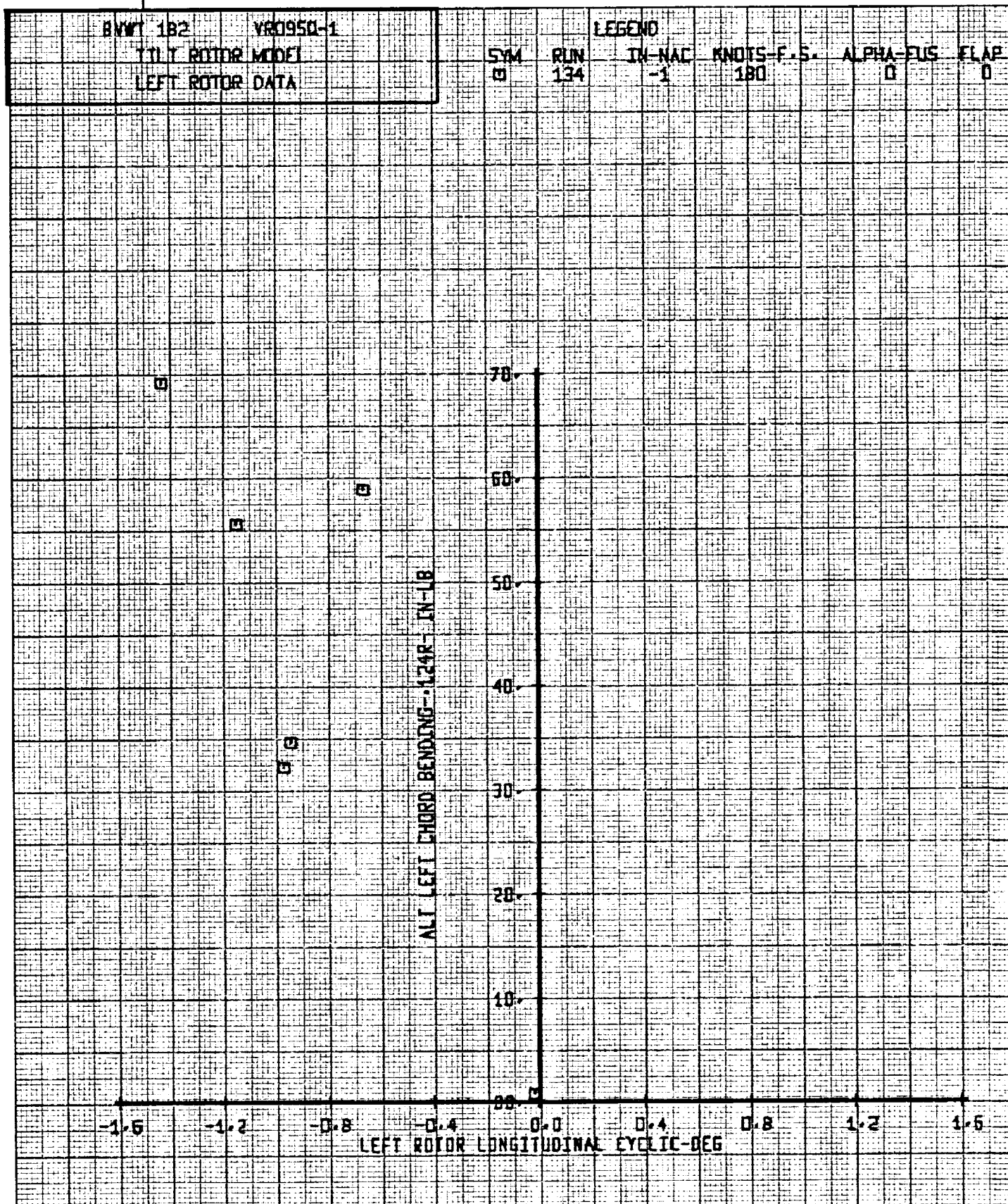


Figure 14-067. Alt. Left Chord Bending Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

134

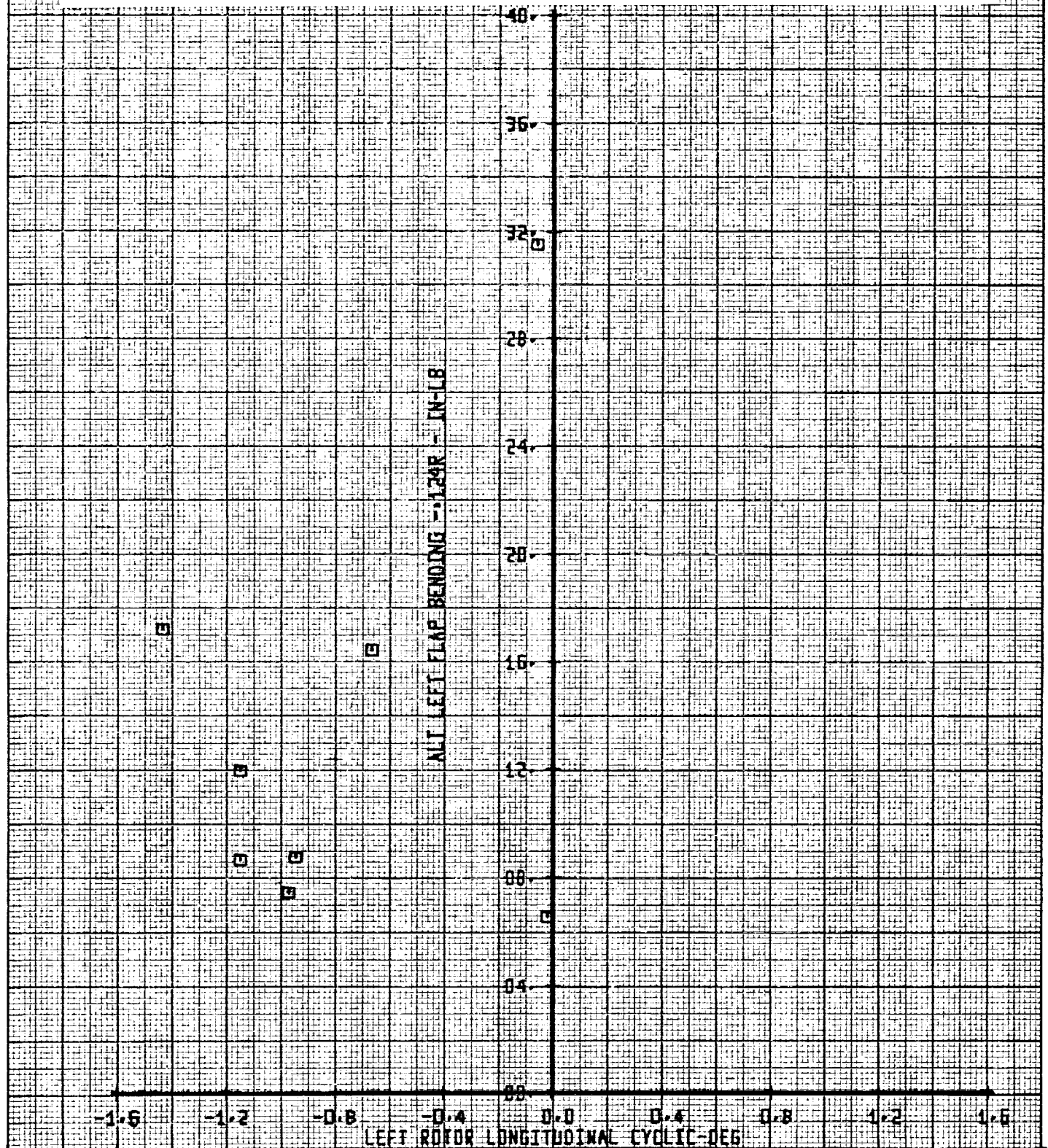
-1

180

0

0

Figure 14-068. Alt. Left Flap Bending Versus Left Rotor Long.
Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed
180 Knots.



BVWT 182 VR0950-1

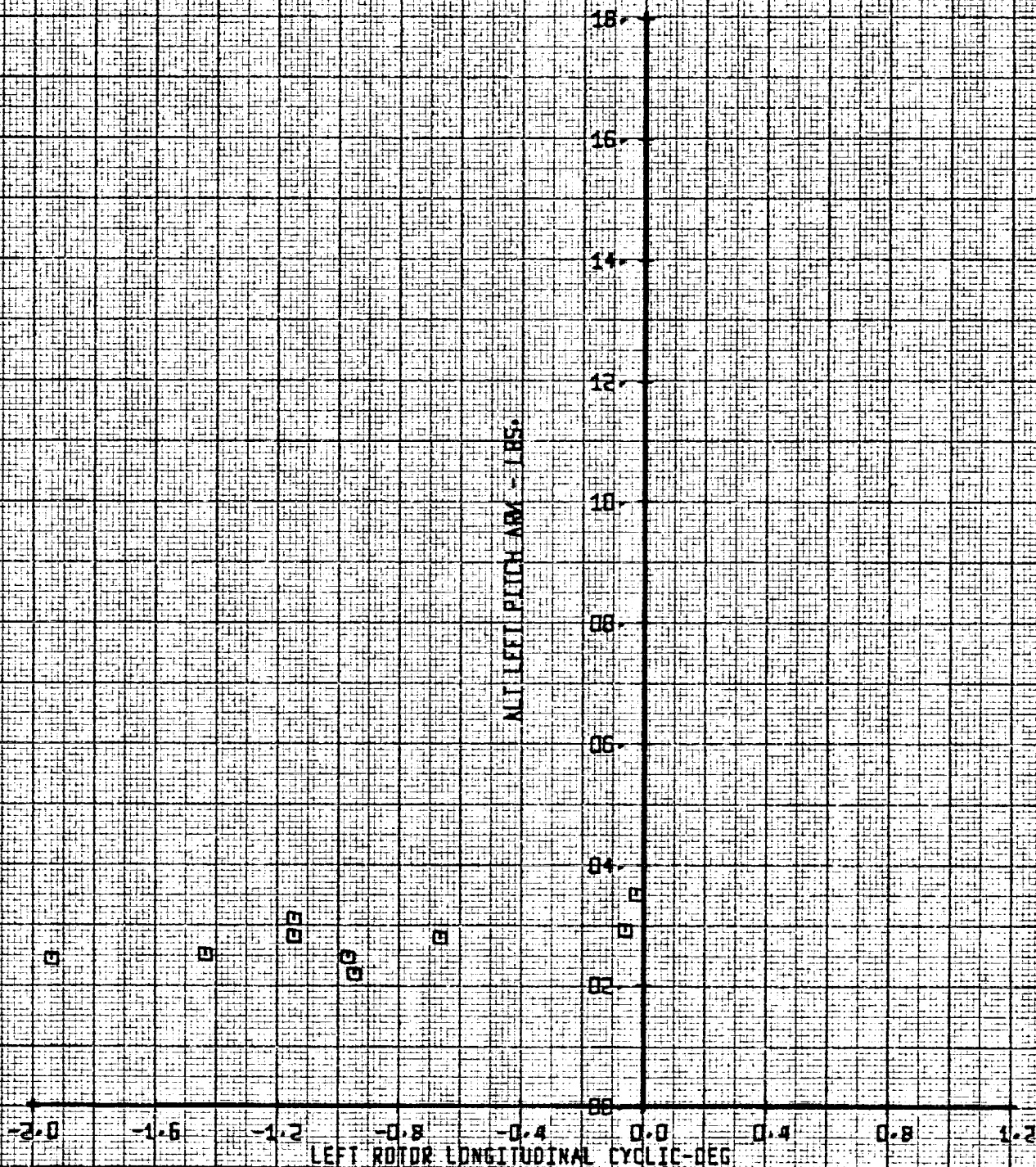
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
0	134	-1	180	0	0

Figure 14-069. Alt. Left Pitch Link Load Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



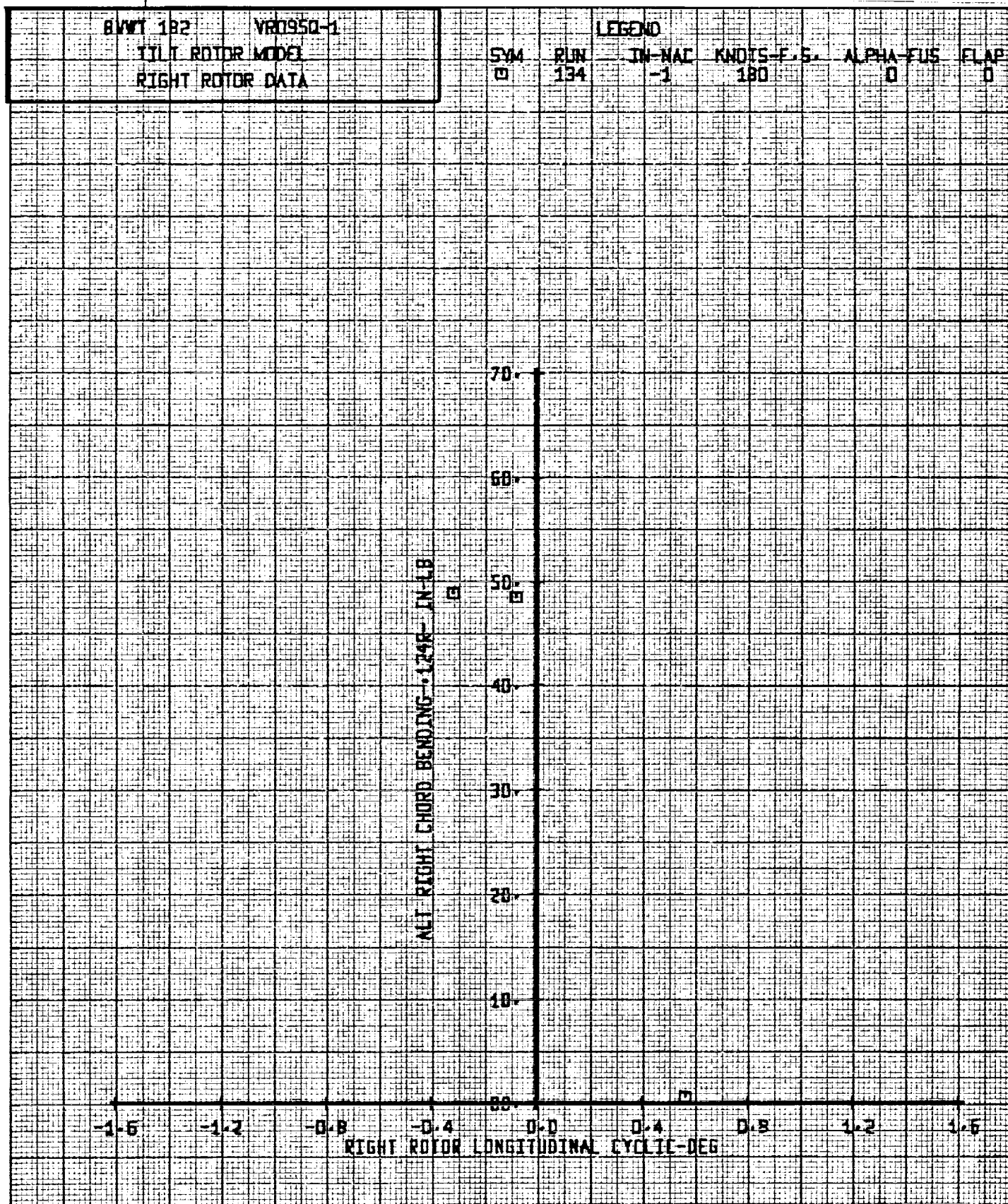


Figure 14-070. Alt. Right Chord Bending Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

BVWT 182 YR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM

RUN

LEGEND

IN-HAC

KNOTS-F.S.

ALPHA-FUS

FLAP

134

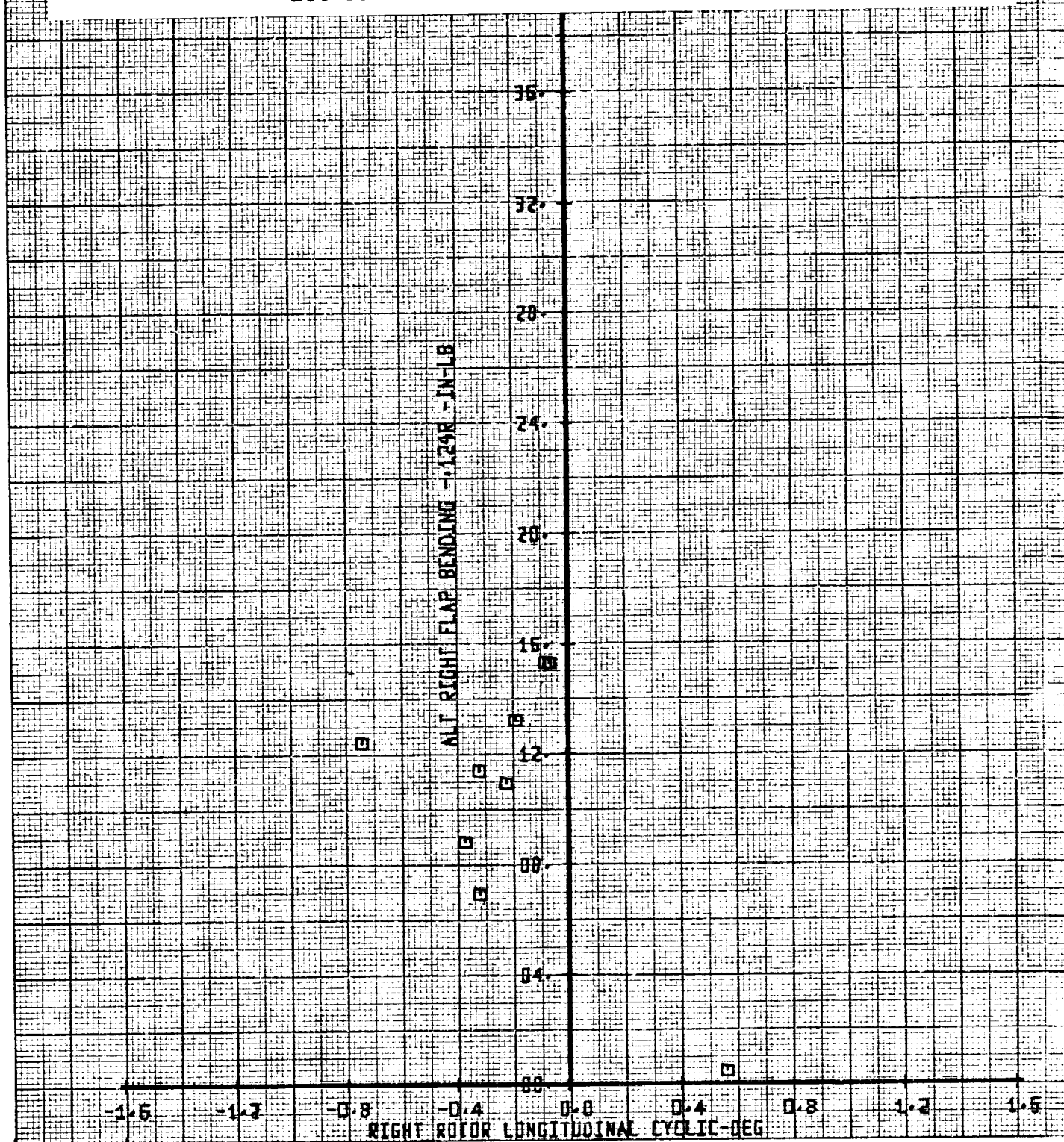
-1

180

0

0

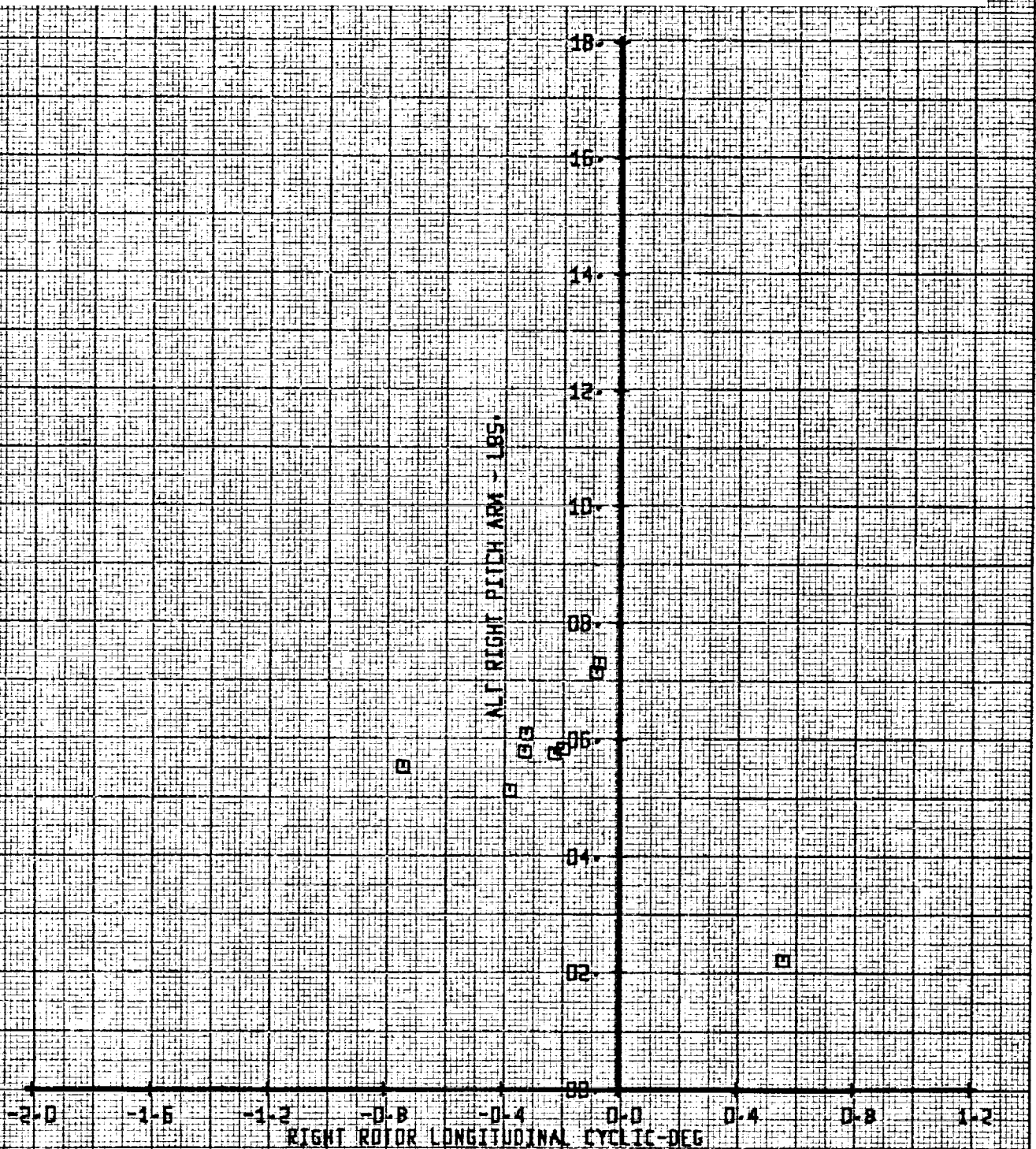
Figure 14-071. Alt. Right Flap Bending Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



BVWT 182 YR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND
SYM RUN IN-MAC KNOTS-F.S. ALPHA-FUS FLAP
□ 134 -1 180 0 0

Figure 14-072. Alt. Right Pitch Link Load Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 180 Knots.



BVWT 182 VR0950-1

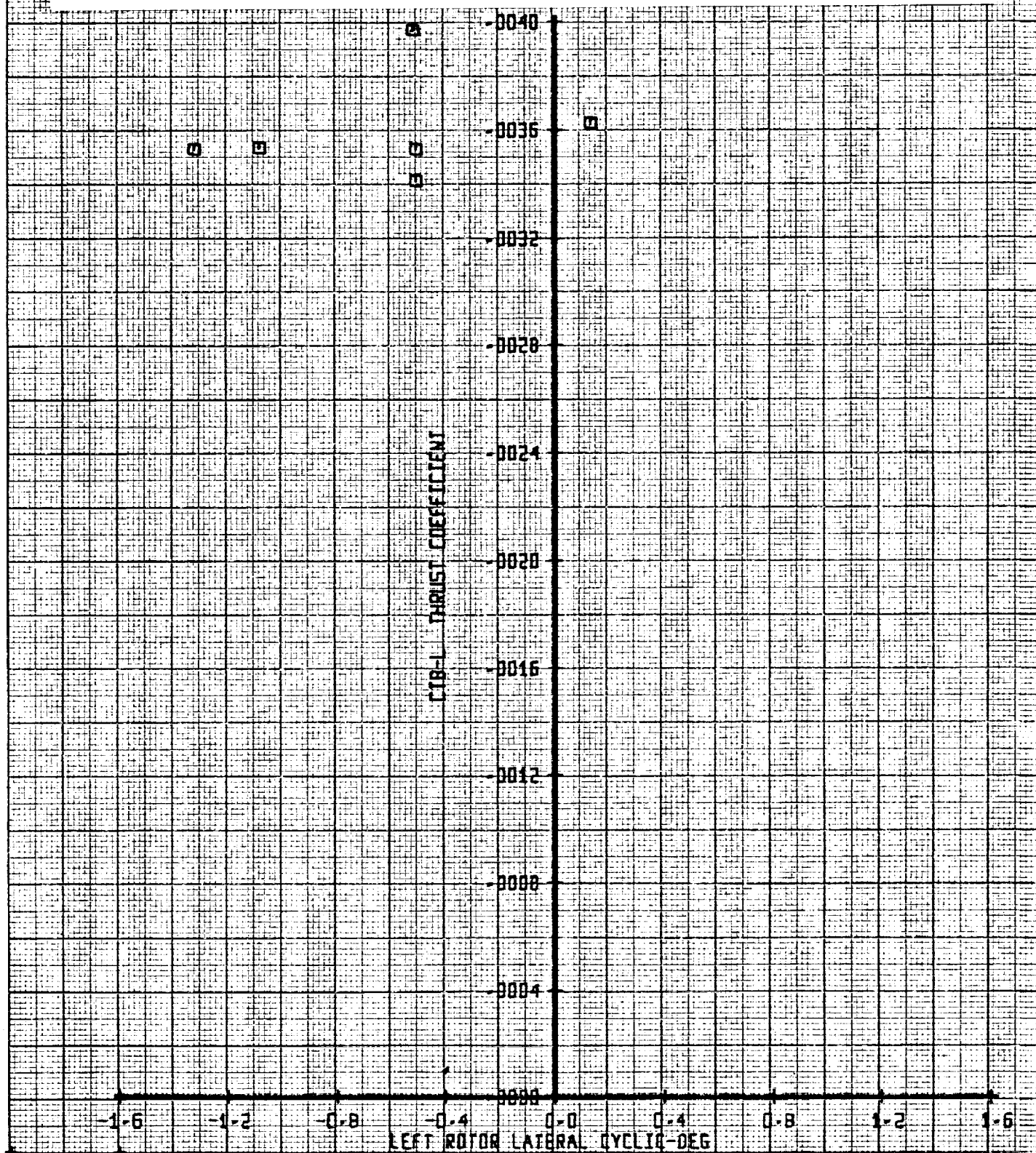
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM
□RUN
133IN-MAG
-1KNOTS-F.F.S.
180ALPHA-FLS
0FLAP
0

Figure 14-073. Left Rotor Thrust Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 180 Knots.



BVWT 182 VR095Q-1

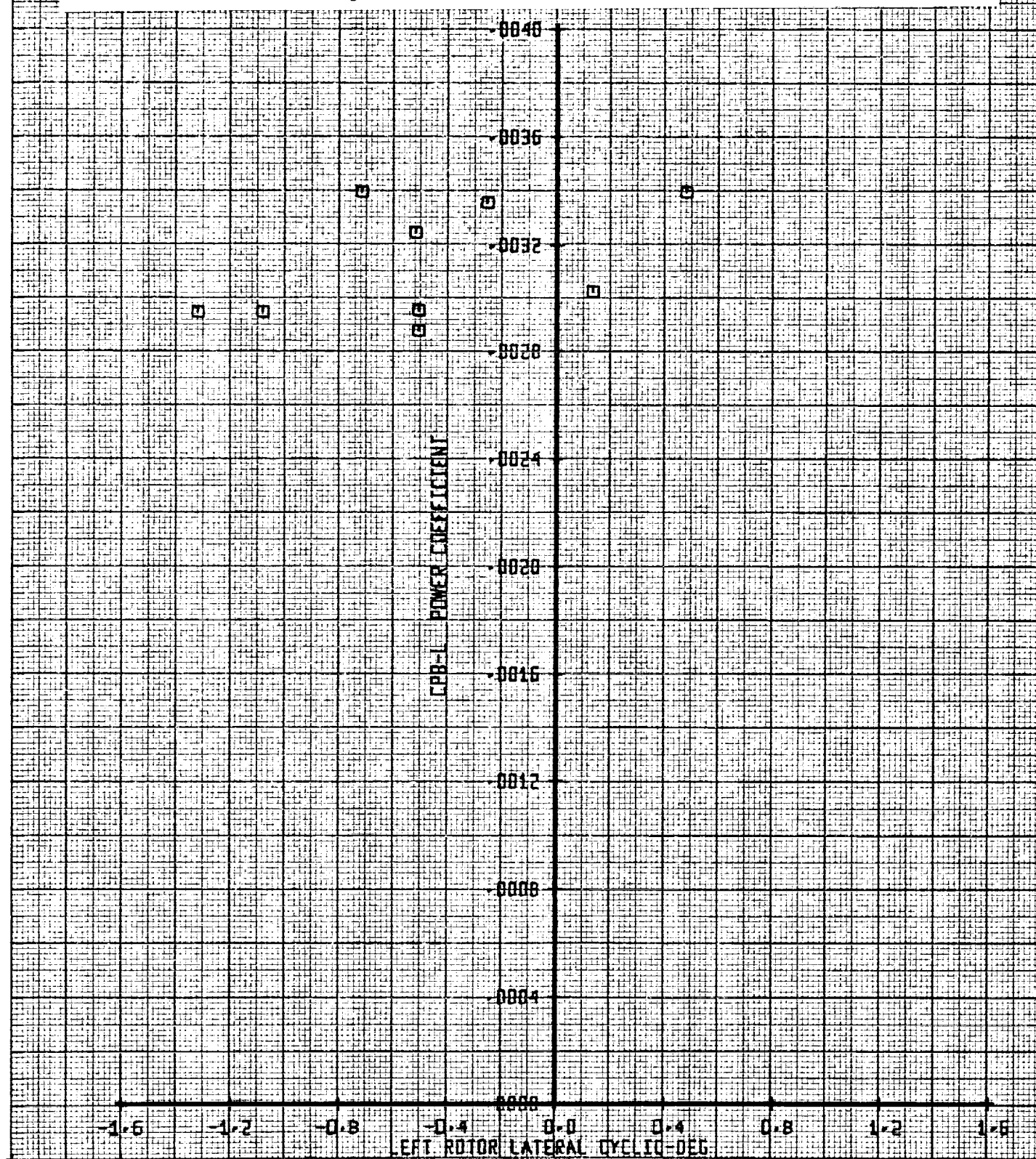
TILT ROTOR MODE

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	133	-1	180	0	0

Figure 14-074. Left Rotor Power Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 180 Knots.



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 BVWT 182

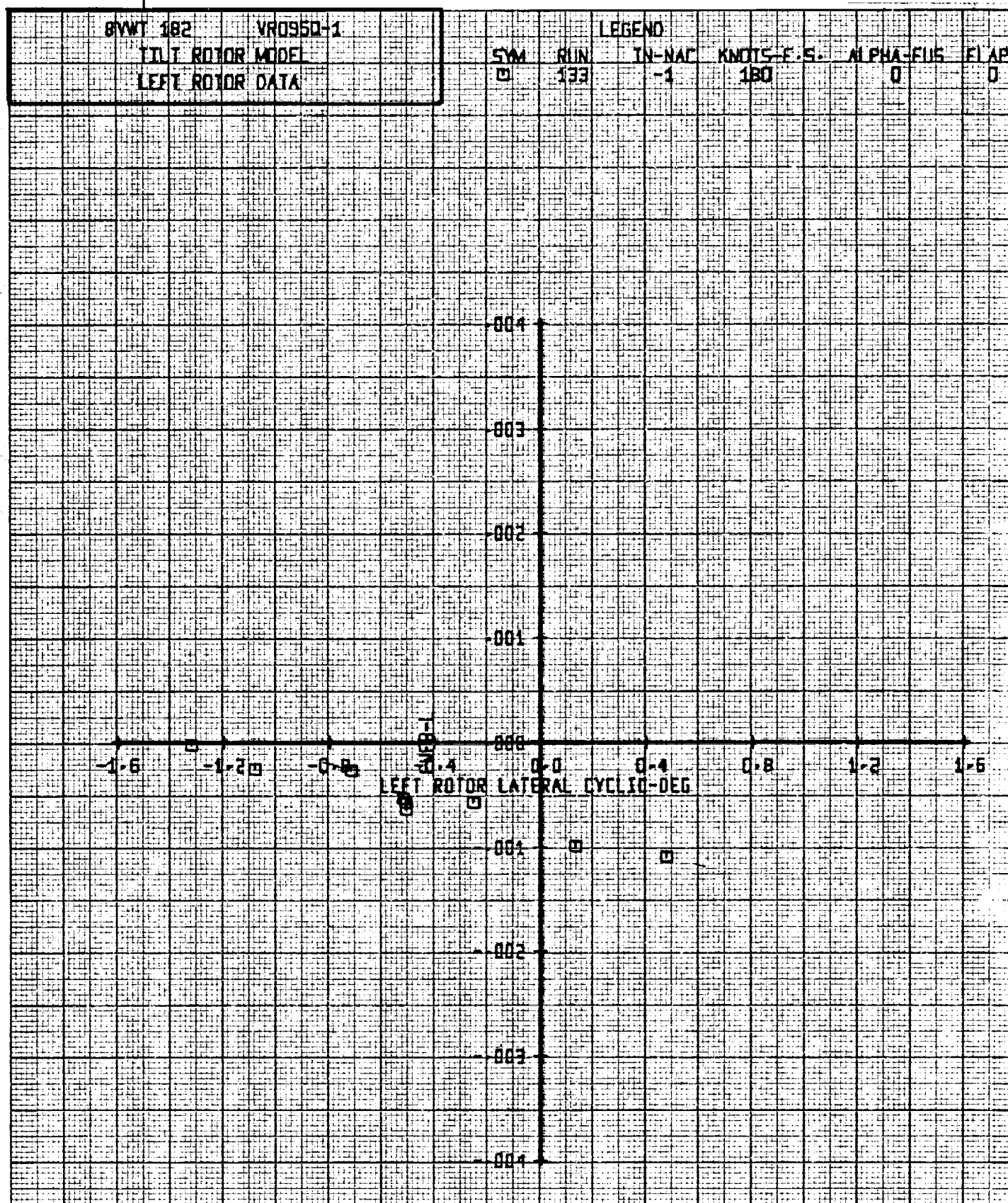


Figure 14-075. Left Rotor Normal Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

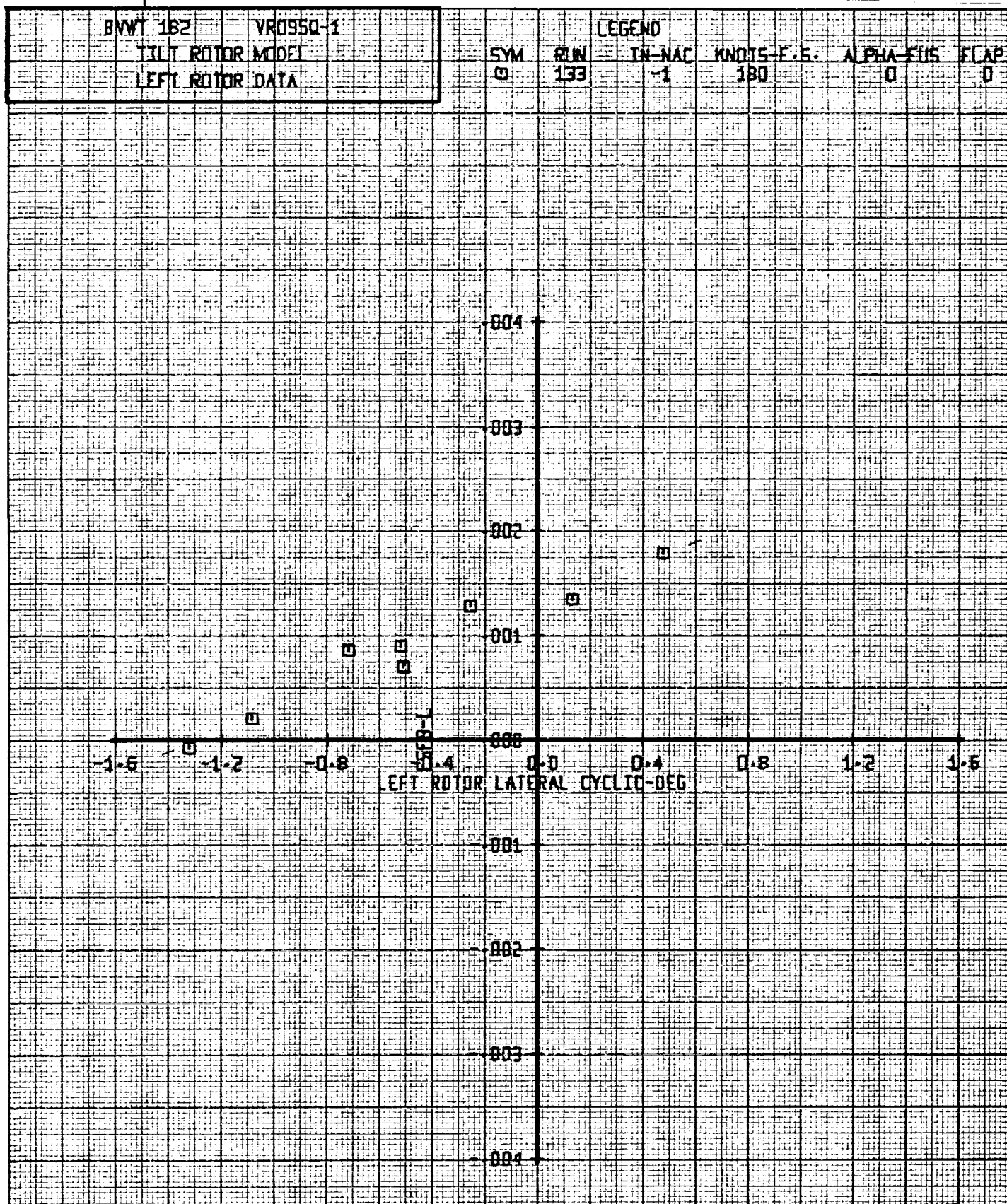
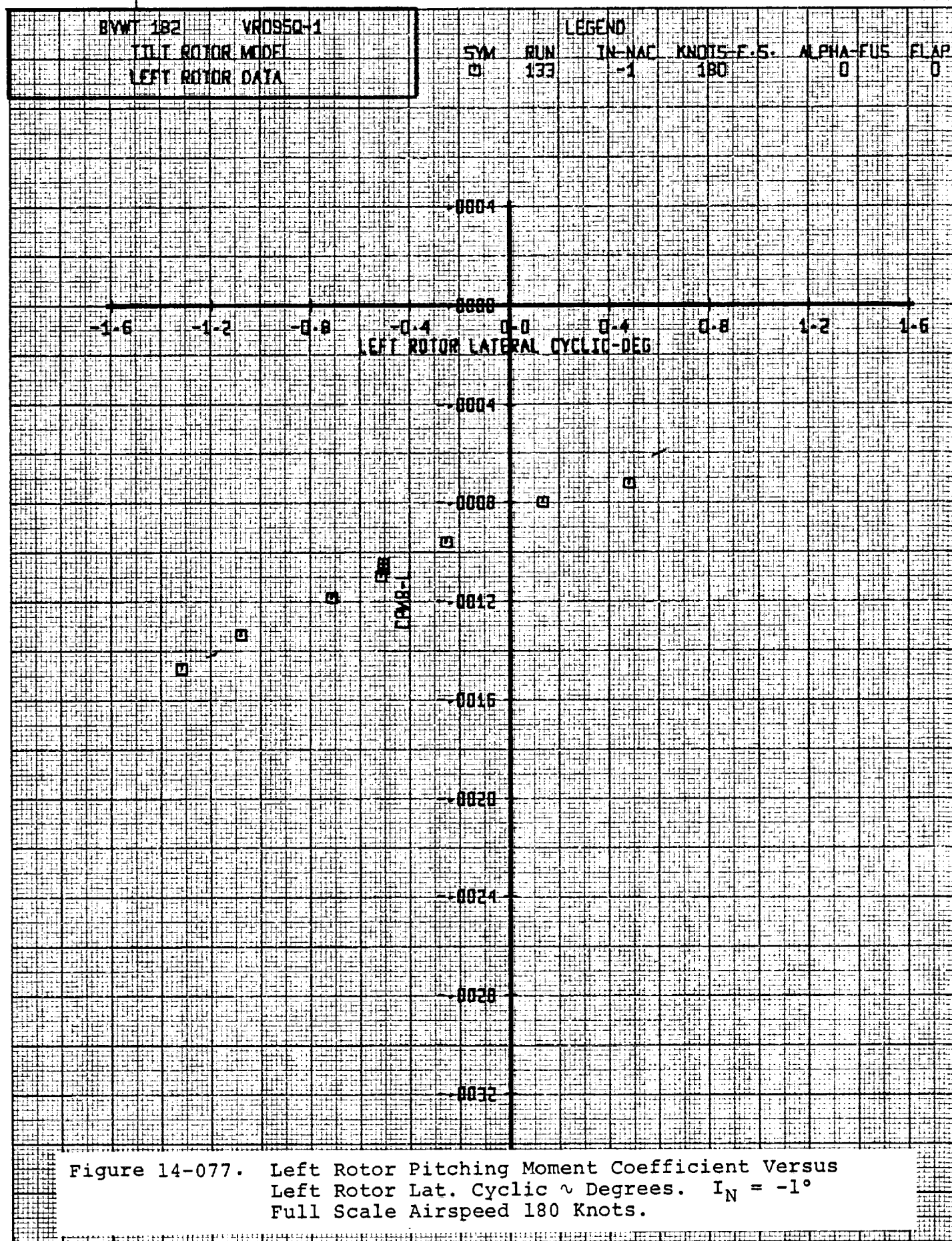


Figure 14-076. Left Rotor Side Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



BVWT 182 VR0950-1

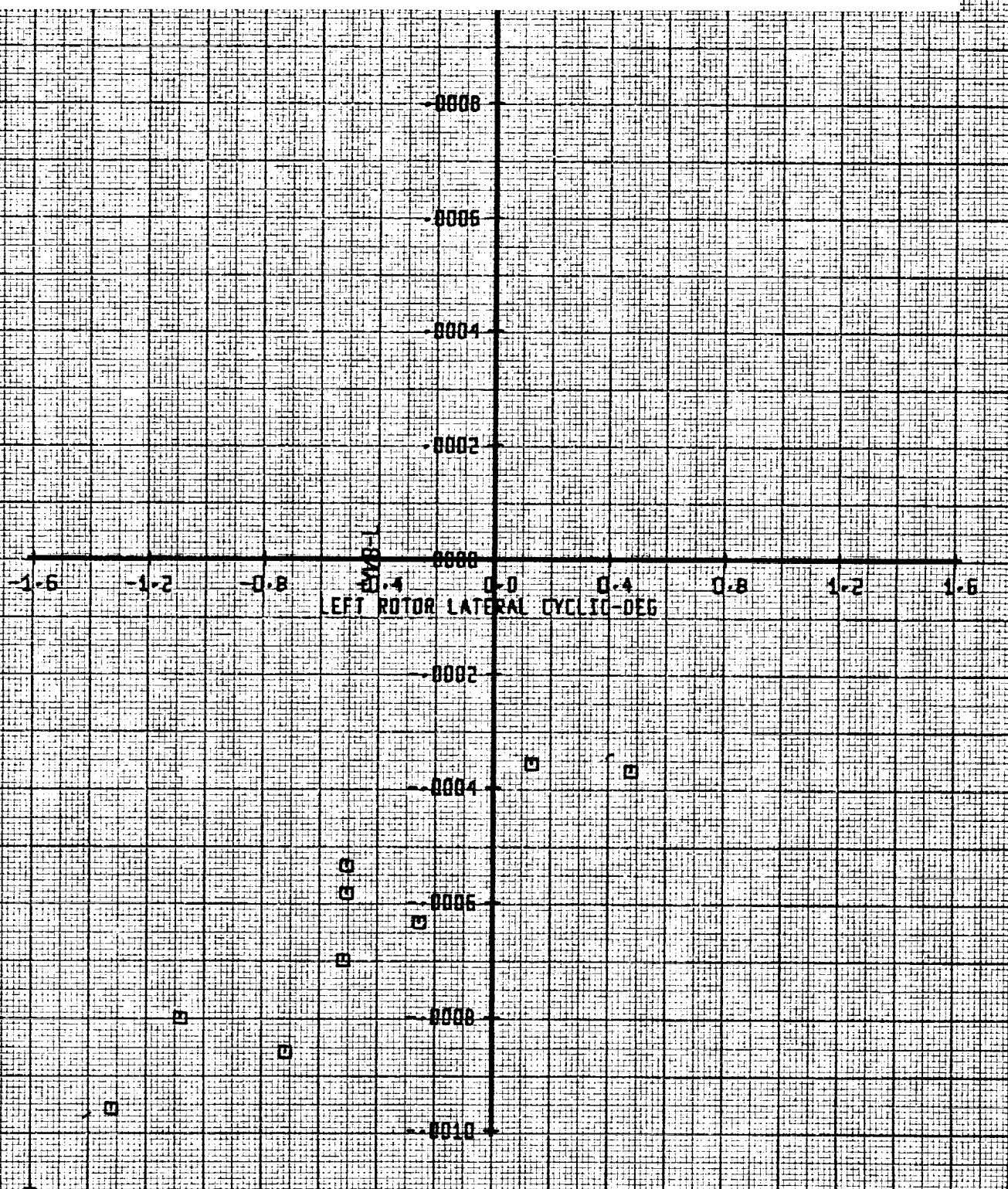
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

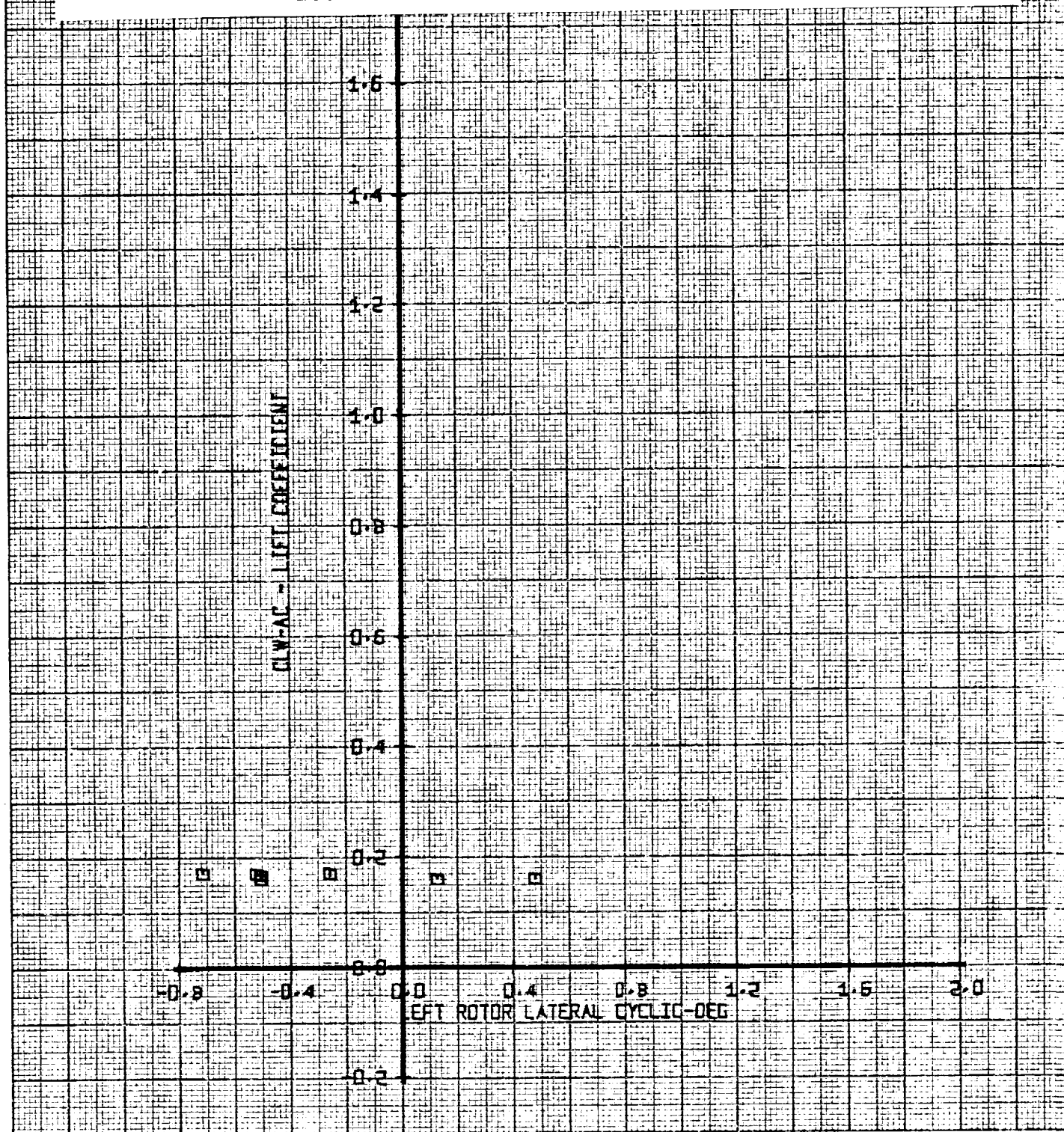
SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FLY	FLAP
□	133	-1	180	0	0

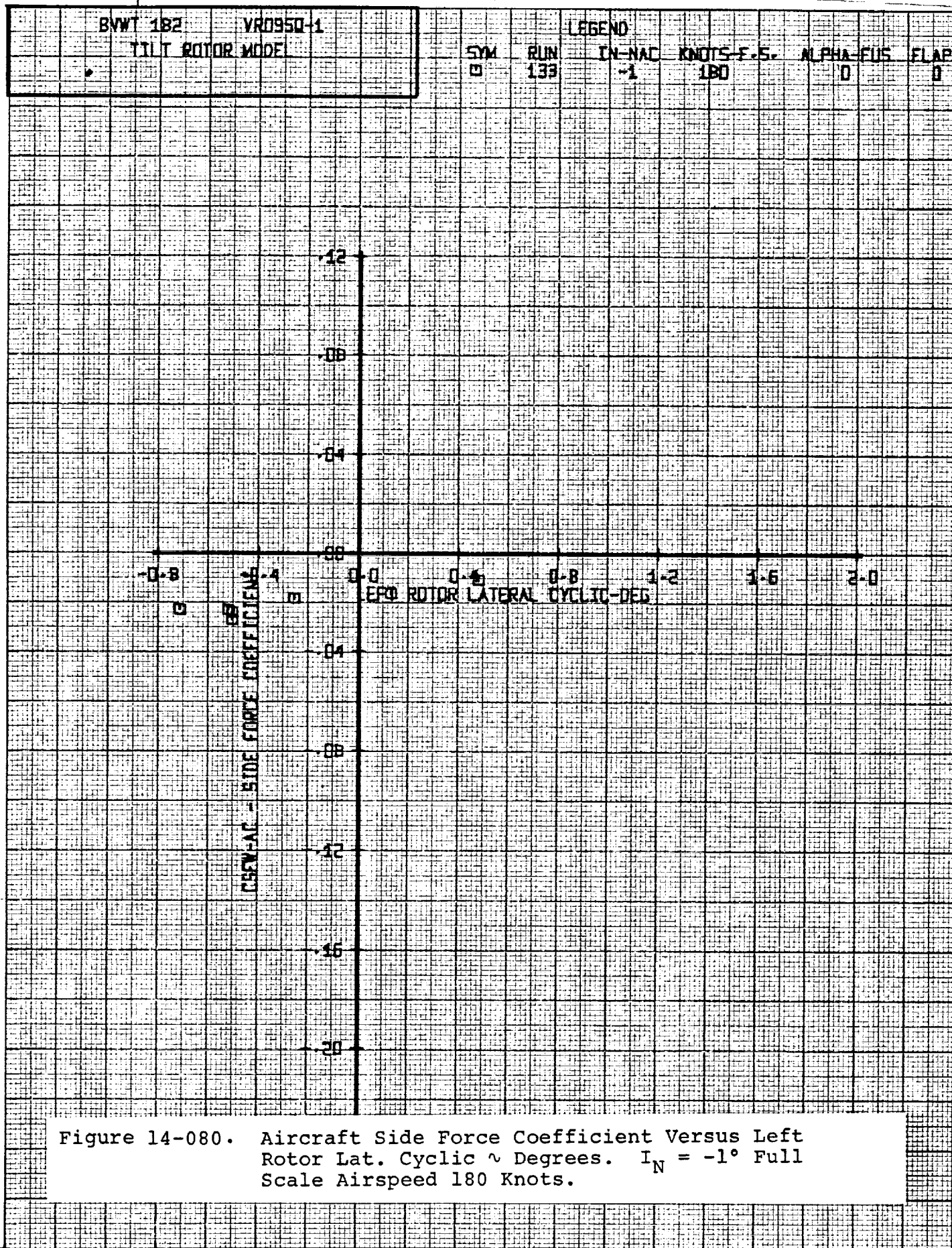
Figure 14-078. Left Rotor Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

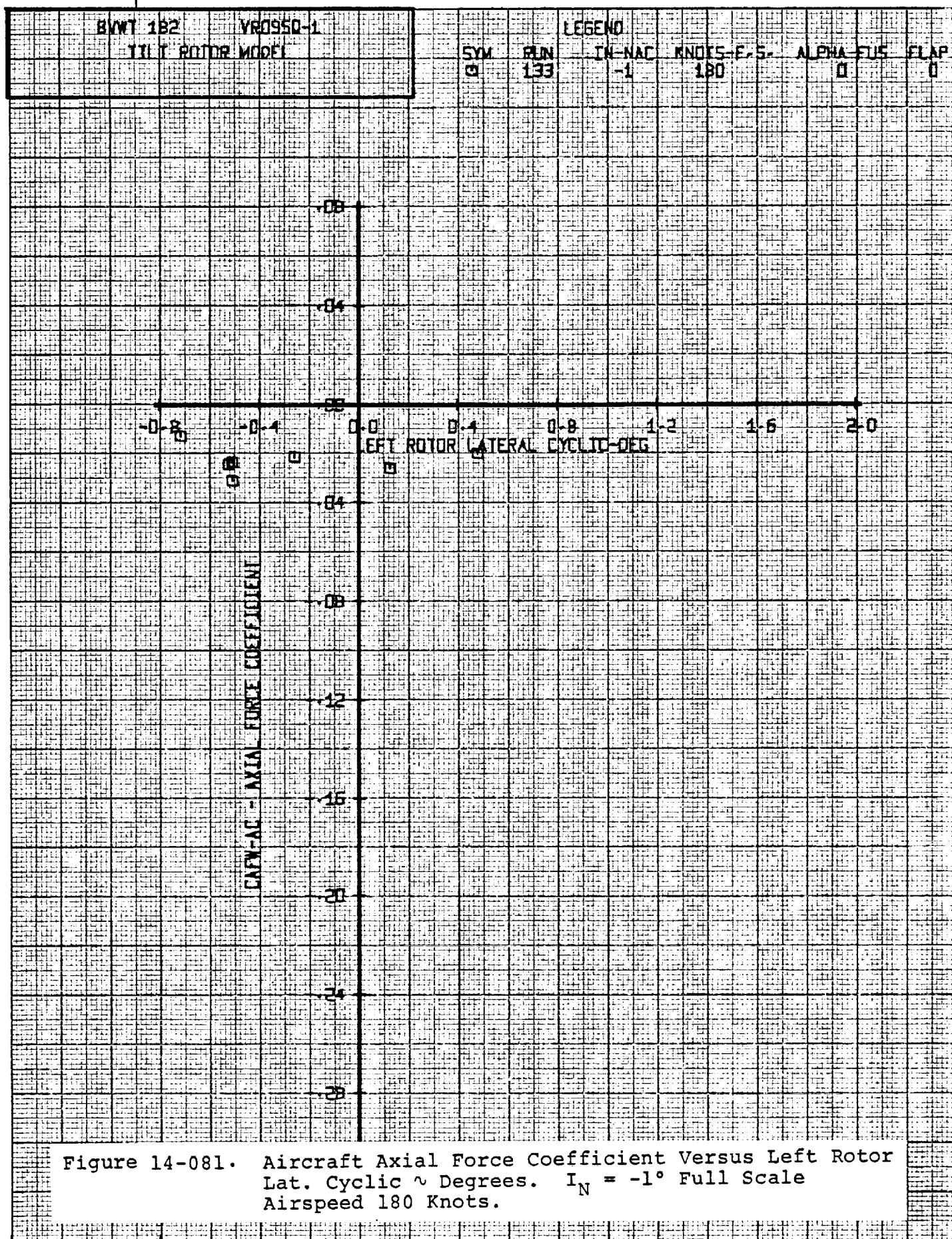


BVWT 182	VR0950-1	LEGEND				
TILT ROTOR MODEL		SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS
		□	133	-1	180	0
						FLAP
						0

Figure 14-079. Aircraft Lift Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.







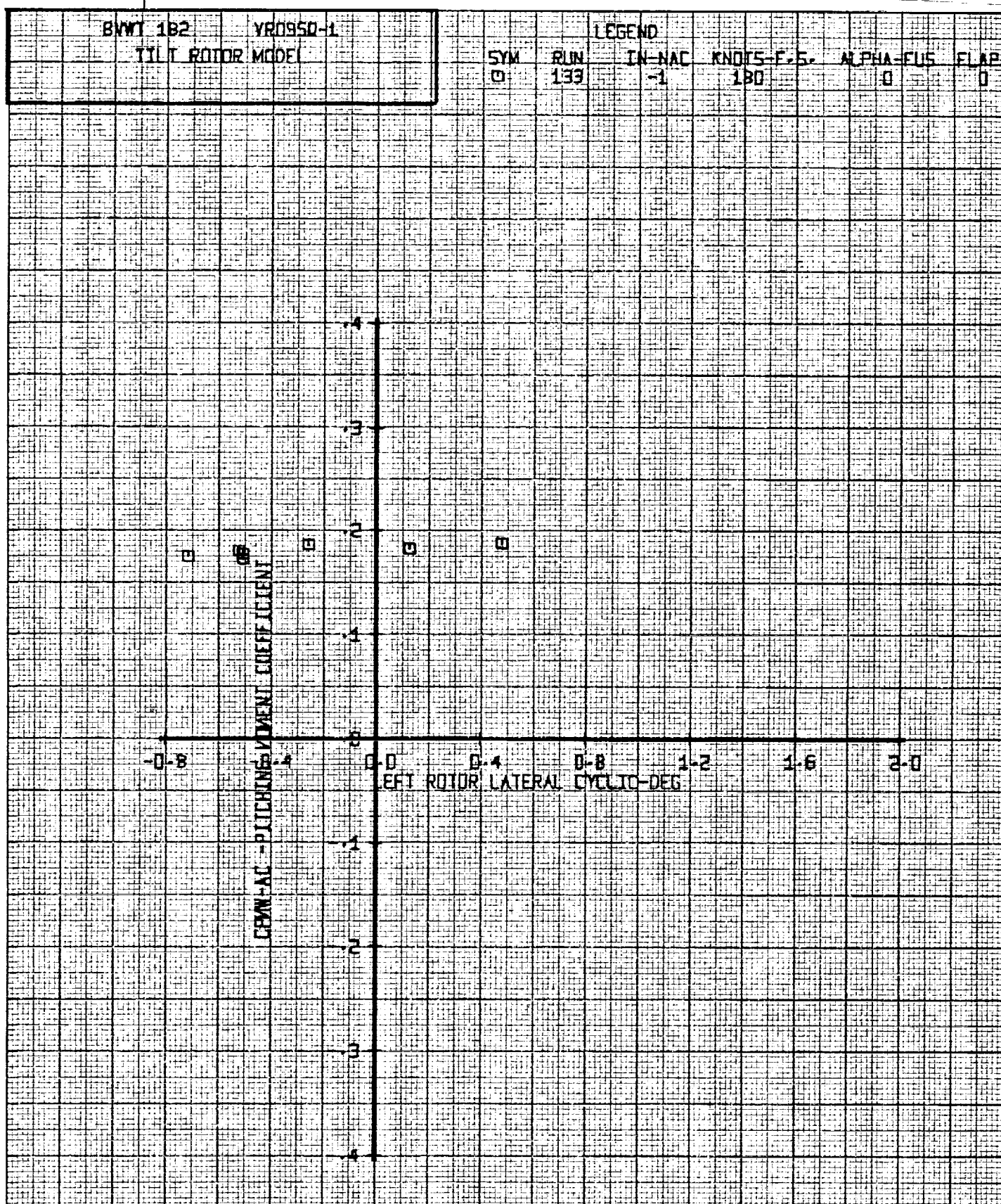
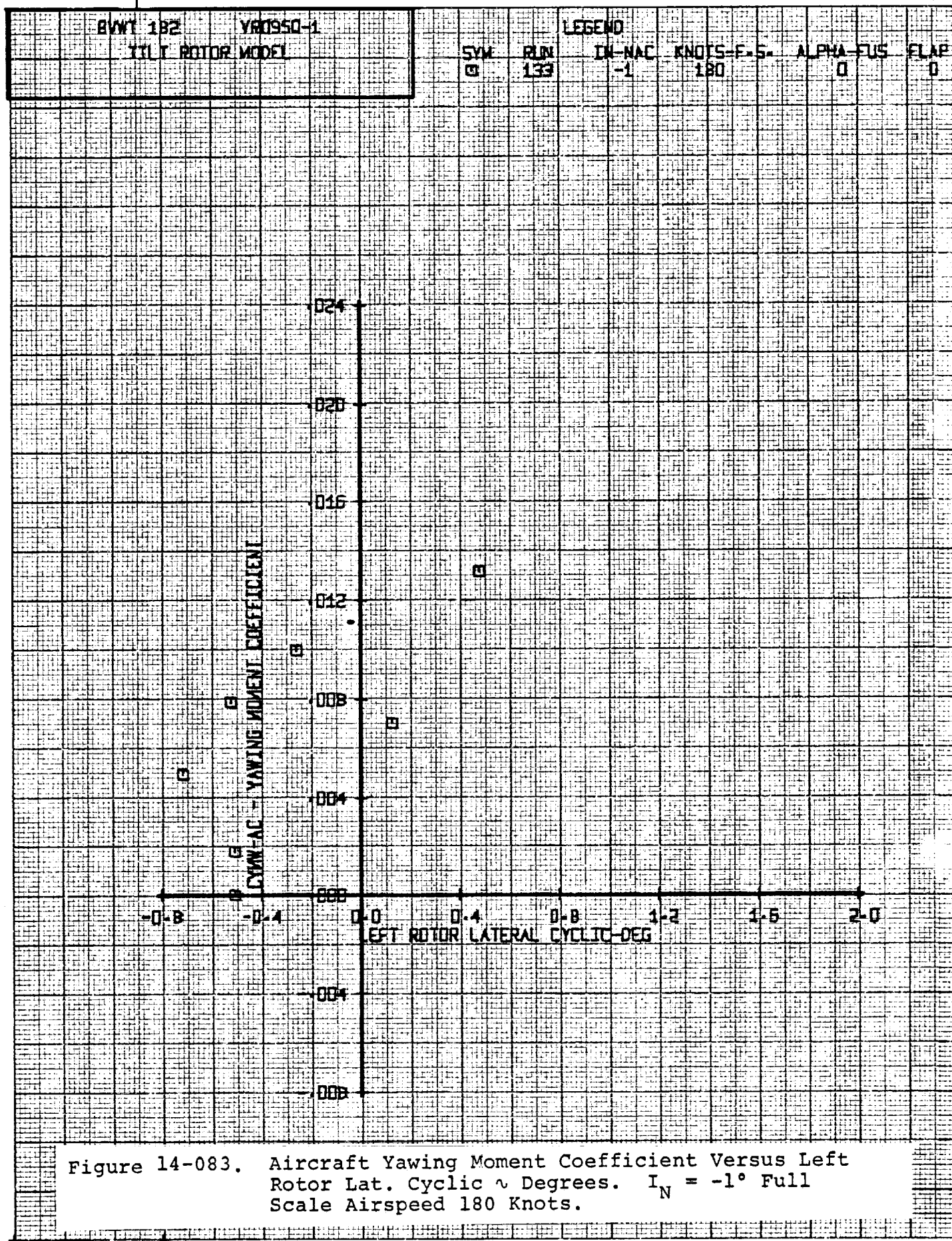


Figure 14-082. Aircraft Pitching Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



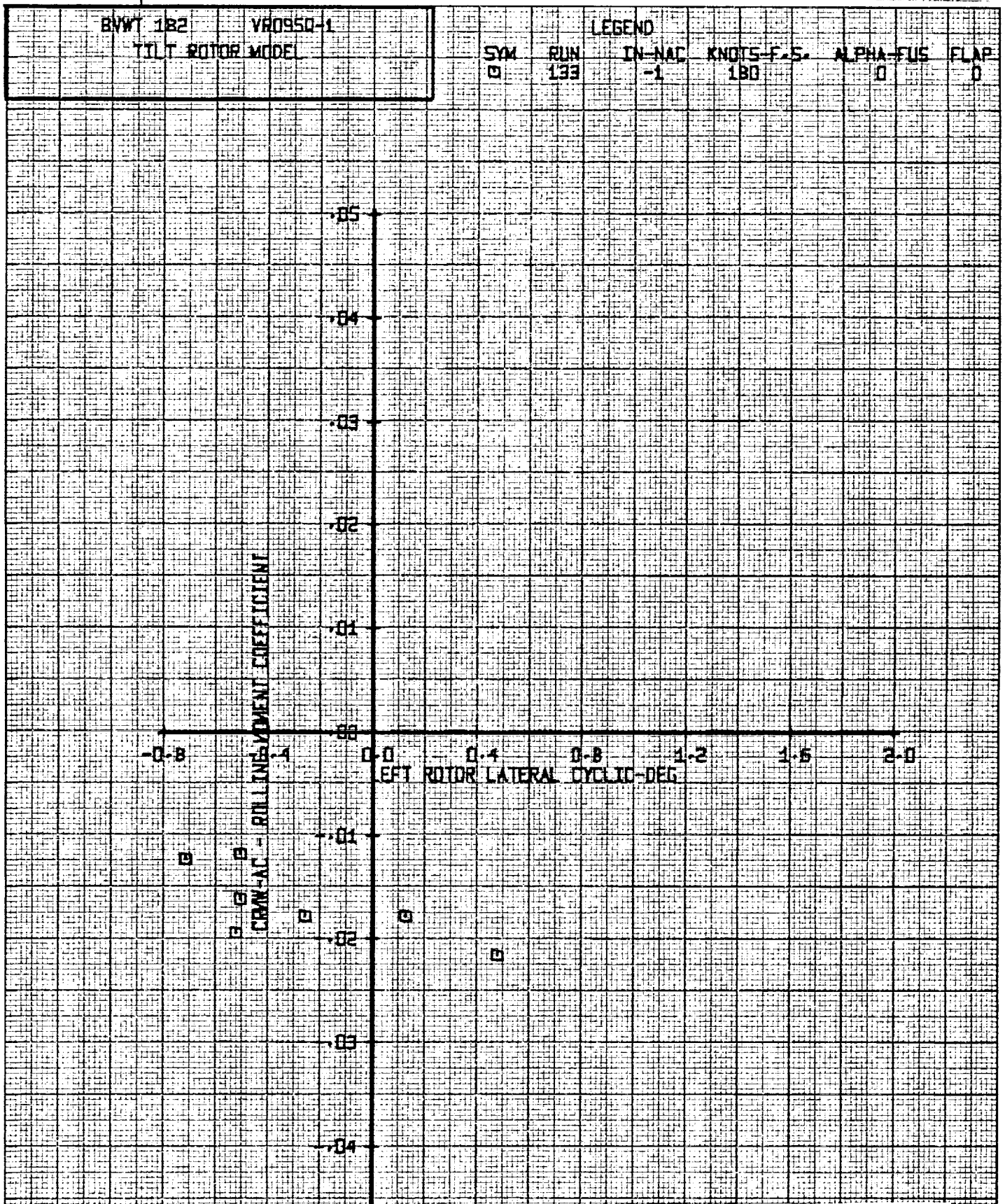


Figure 14-084. Aircraft Rolling Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

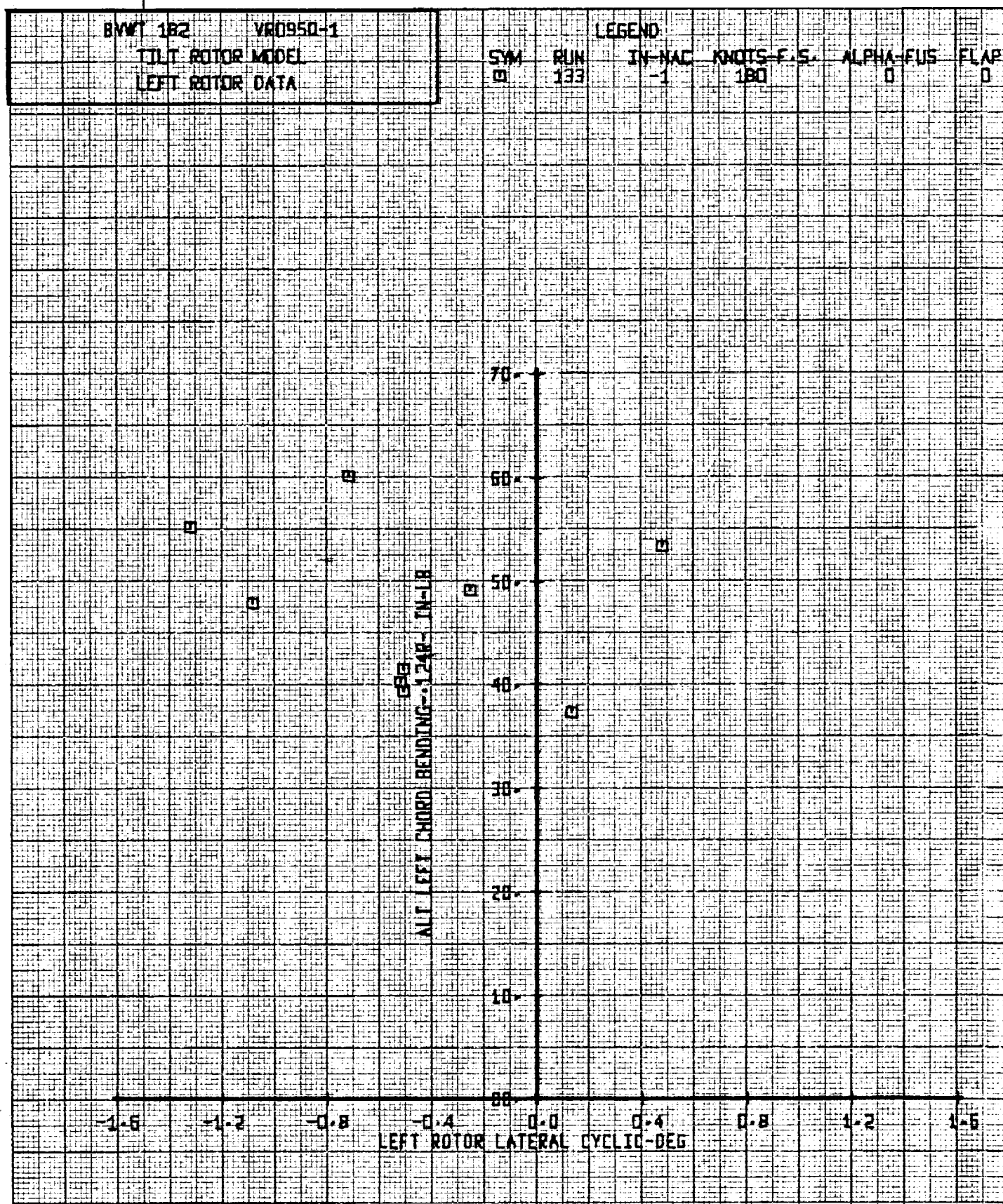


Figure 14-085. Alt. Left Chord Bending Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

BWV 182	VR0950-1
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TILT ROTOR MODE

LEFT ROTOR DATA

LEGEND

534

RUN

IN-NAC

KNOTS-F.5.

ALPHA-EUS

FLAP

133

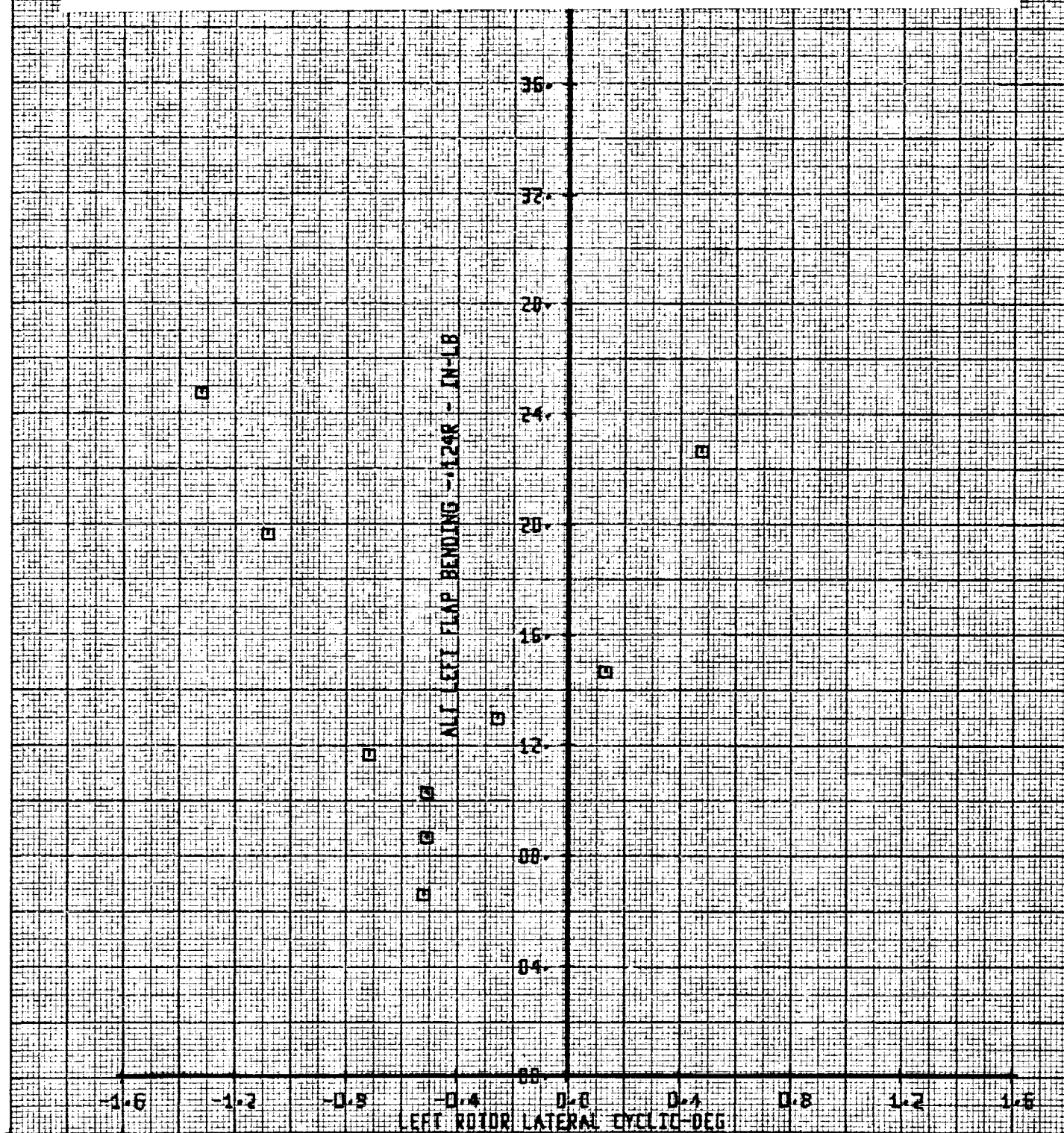
1991

180

1

1

Figure 14-086. Alt. Left Flap Bending Versus Left Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



BWV 182 YR0950-1

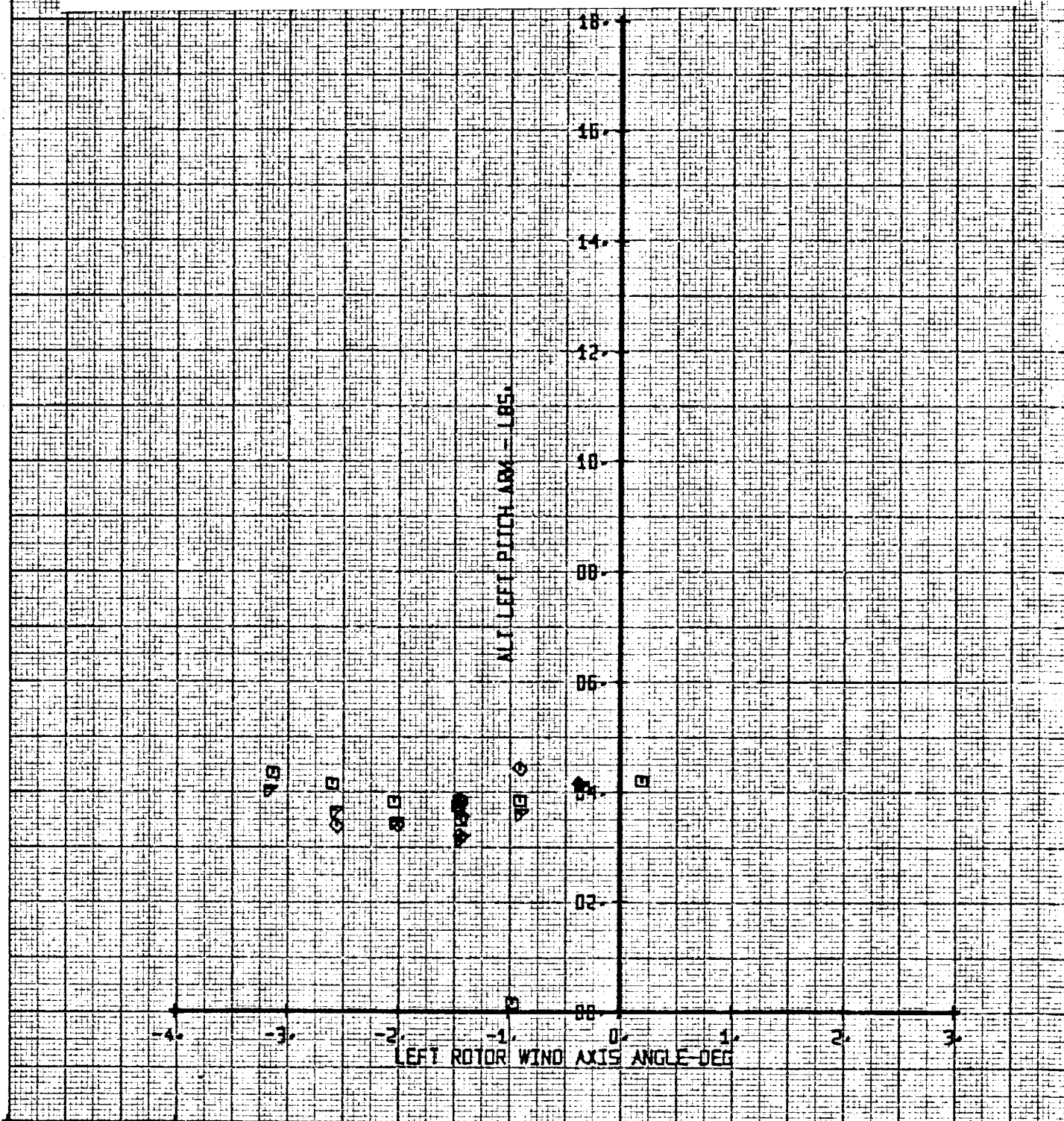
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-E.S.	ALPHA-FUS	FLAP
□	138	-1	220	YARY	0
◇	139	-1	220	YARY	+5
◇	140	-1	220	YARY	+10

Figure 14-087. Alt. Left Pitch Link Load Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.



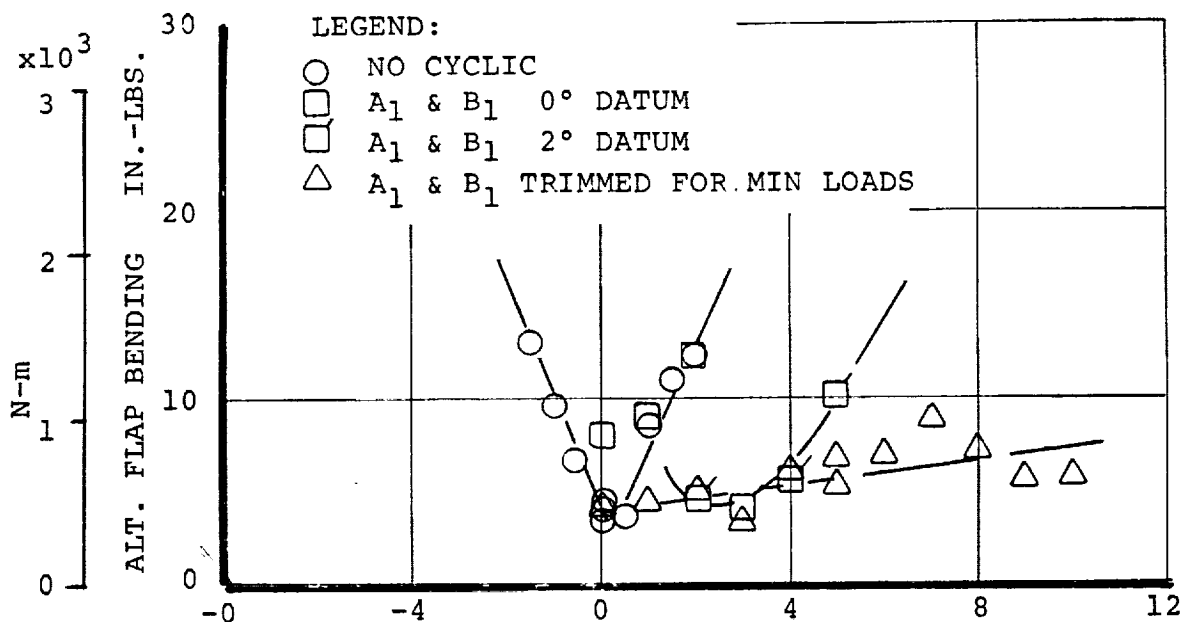


Figure 14-089. Alt. Left Rotor Blade Flap Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

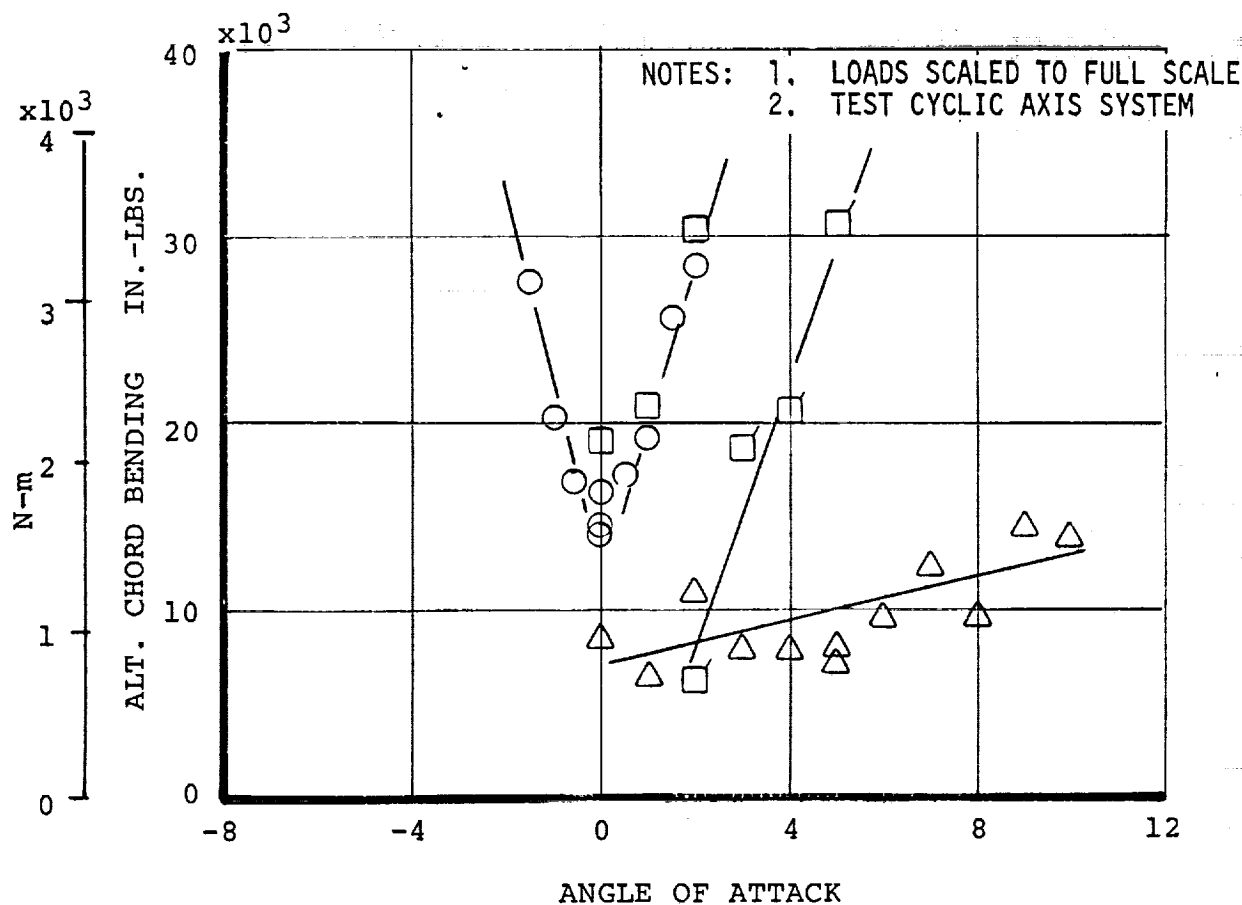


Figure 14-088. Alt. Left Rotor Blade Chord Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 180 Knots.

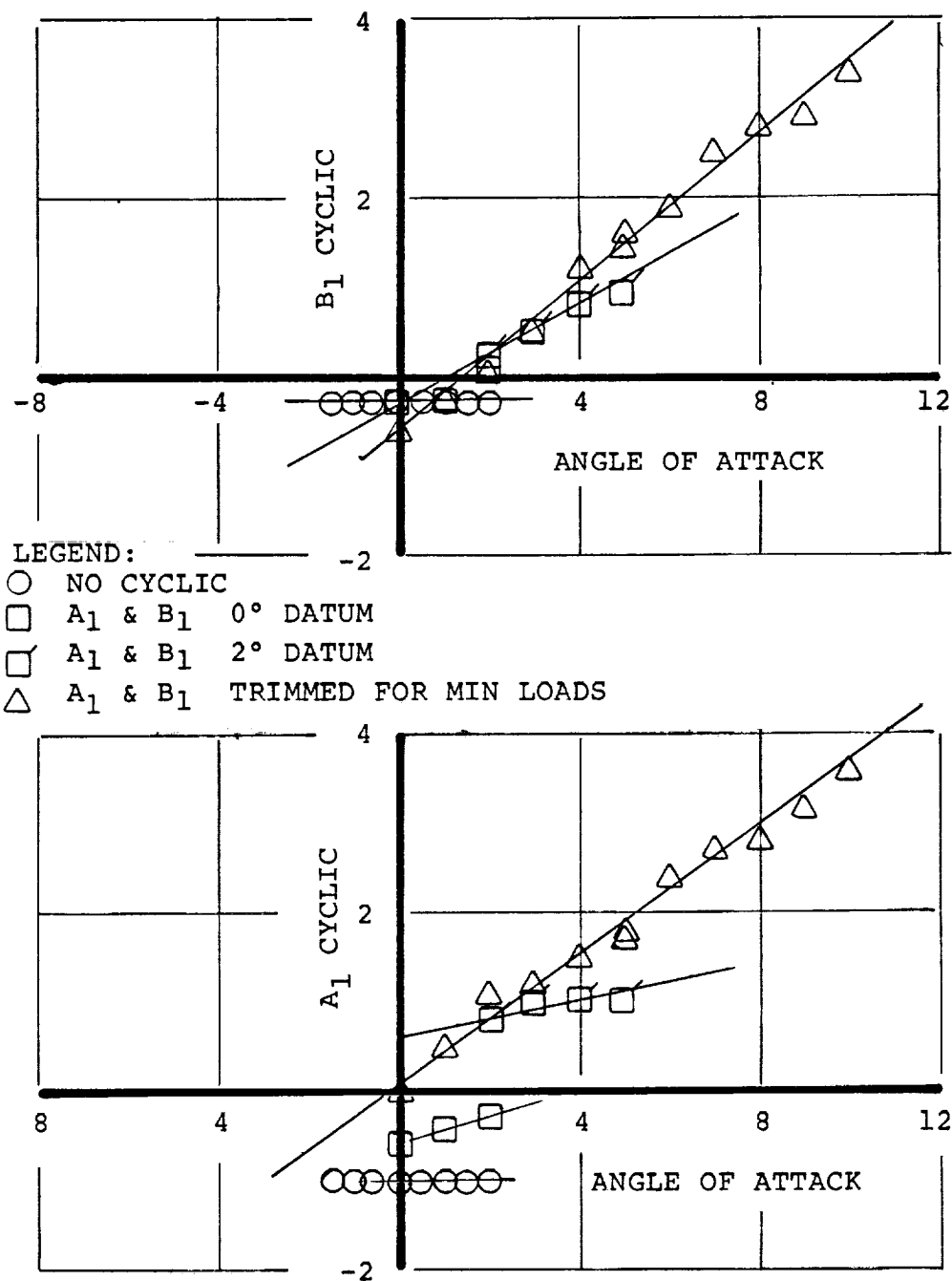


Figure 14-090. Left Rotor Cyclic Schedules. $I_N = -1^\circ$ Full Scale
Airspeed 180 Knots.

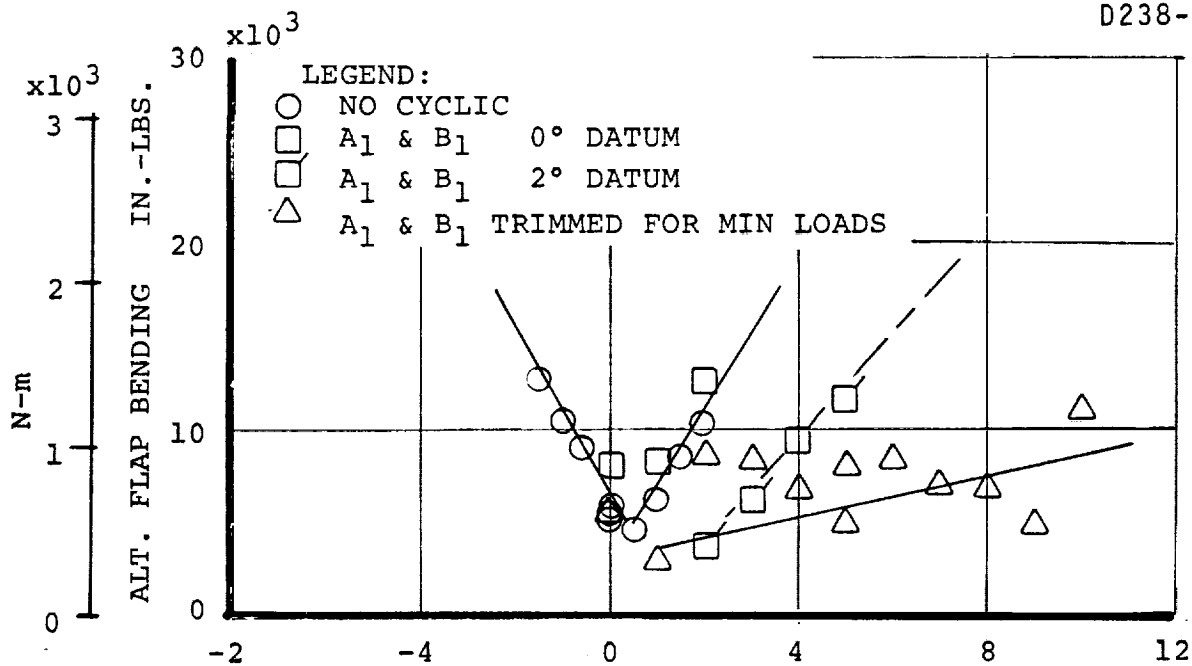


Figure 14-092. Alt. Right Rotor Blade Flap Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Air-speed 180 Knots.

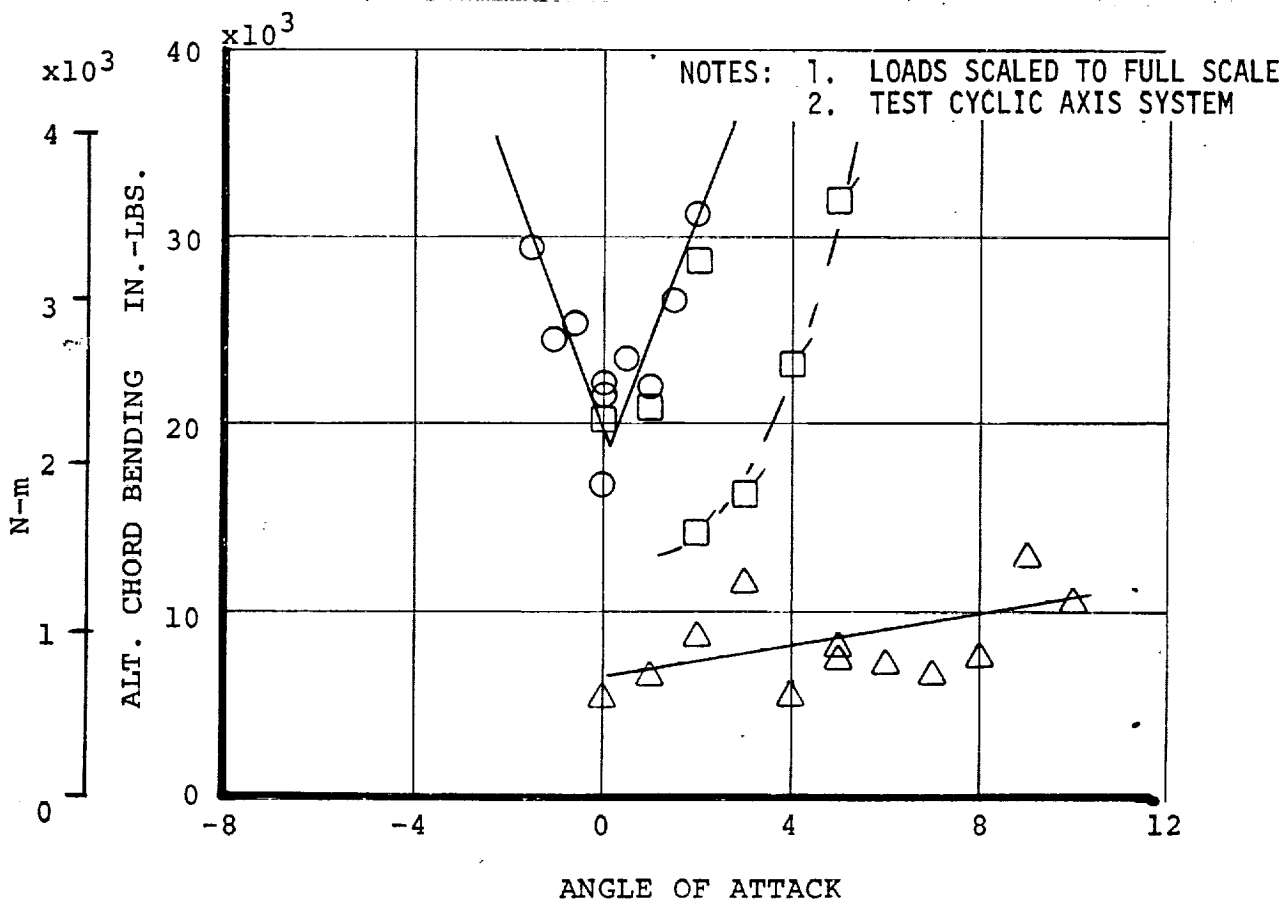


Figure 14-091. Alt. Right Rotor Blade Chord Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Air-speed 180 Knots.

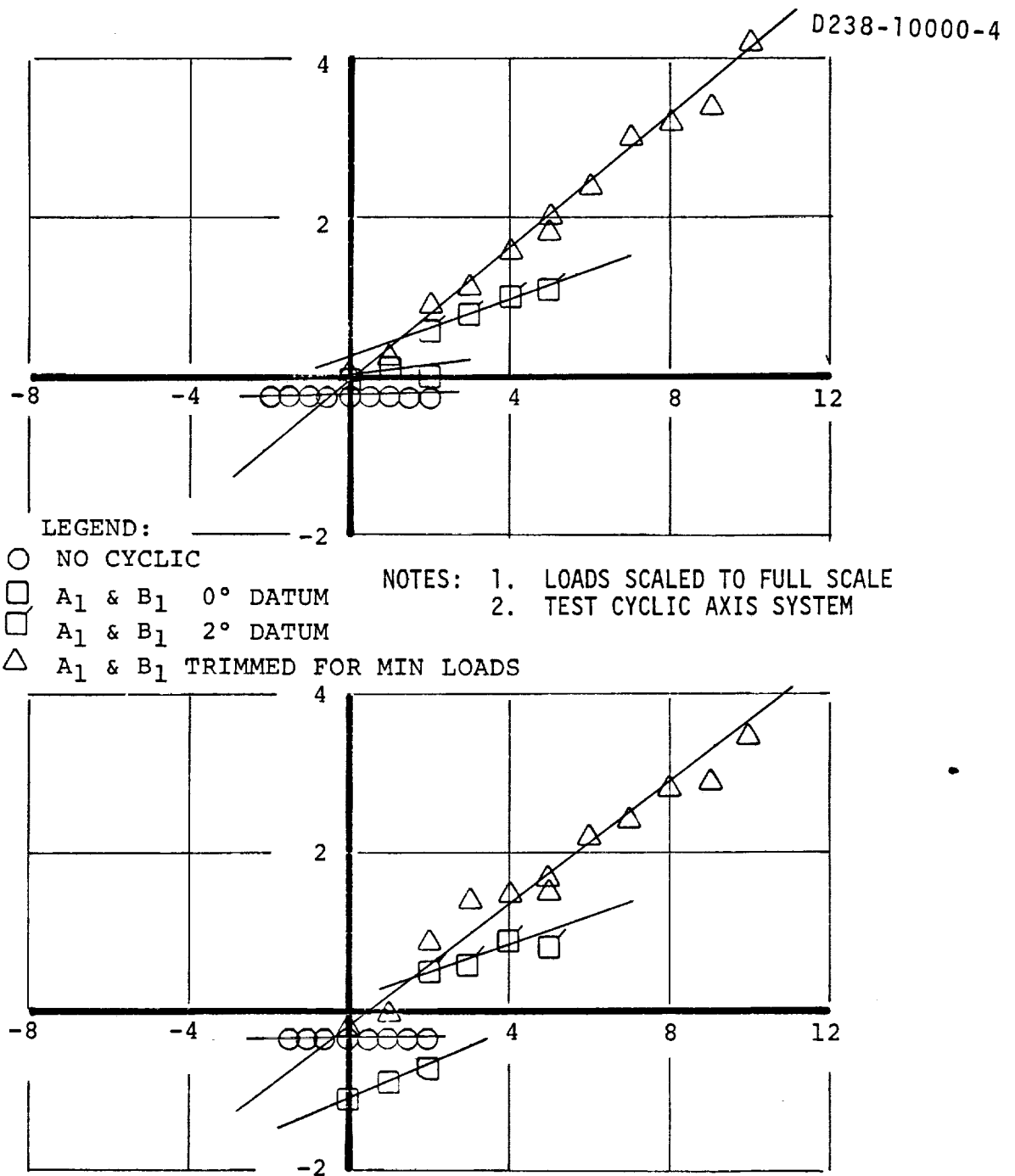


Figure 14-093. Right Rotor Cyclic Schedules. $I_N = -1^\circ$ Full Scale
Airspeed 180 Knots.



100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

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100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

100-100000

$$I_N = -10 V_{FS} = 220 \text{ KTS.}$$

BMW	182	VR0950-1
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TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RLIN

IN-NAC

KNOTS-E-5.

ALPHA-FUS

FLAP

138

... ..

220

VARY

10

四

139
3/40

סמל

VARY

5
40

1998

44

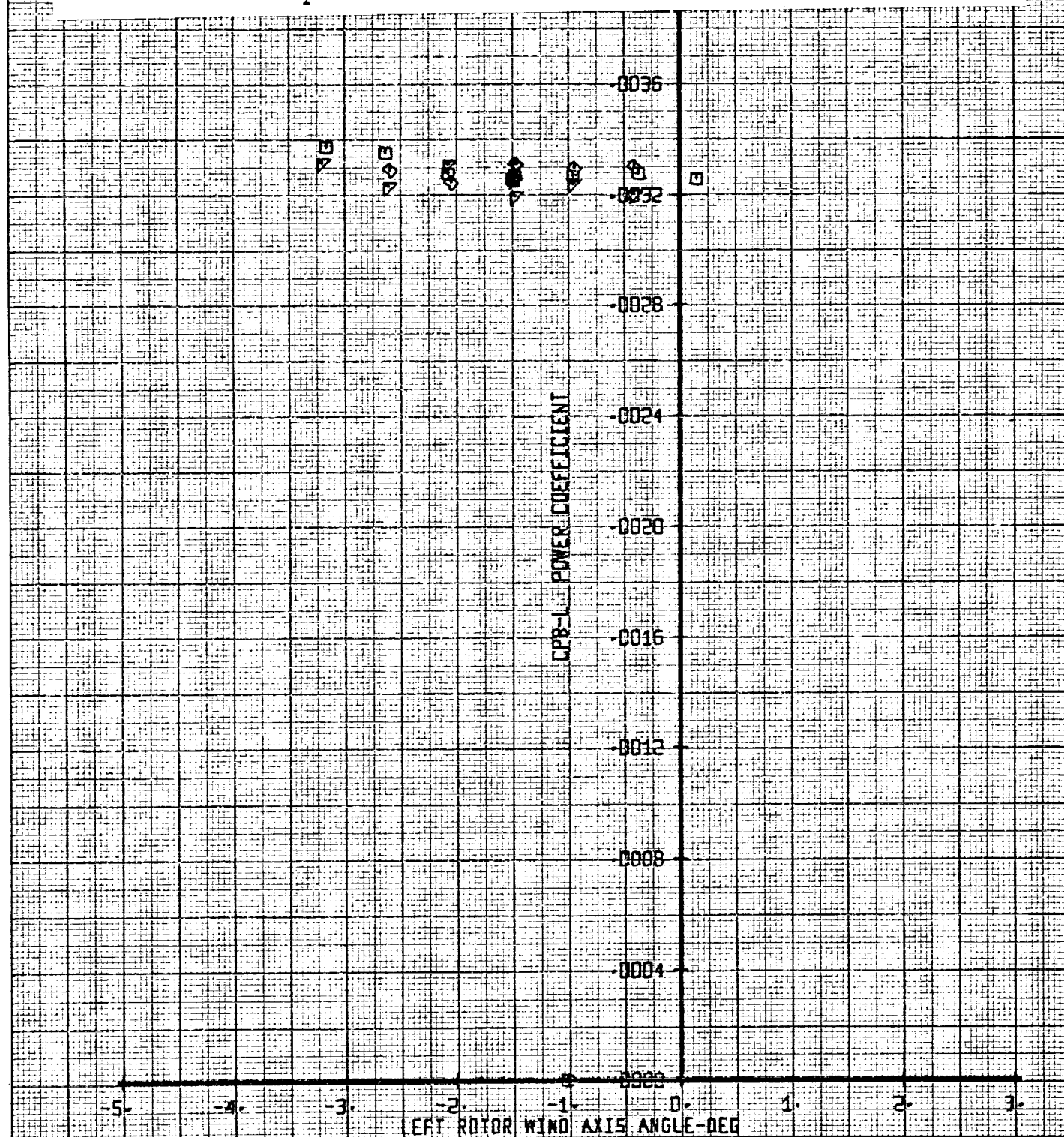
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

1992

[illegible]

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Figure 15-002. Left Rotor Power Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta_F = 0^\circ, 5^\circ, 10^\circ$



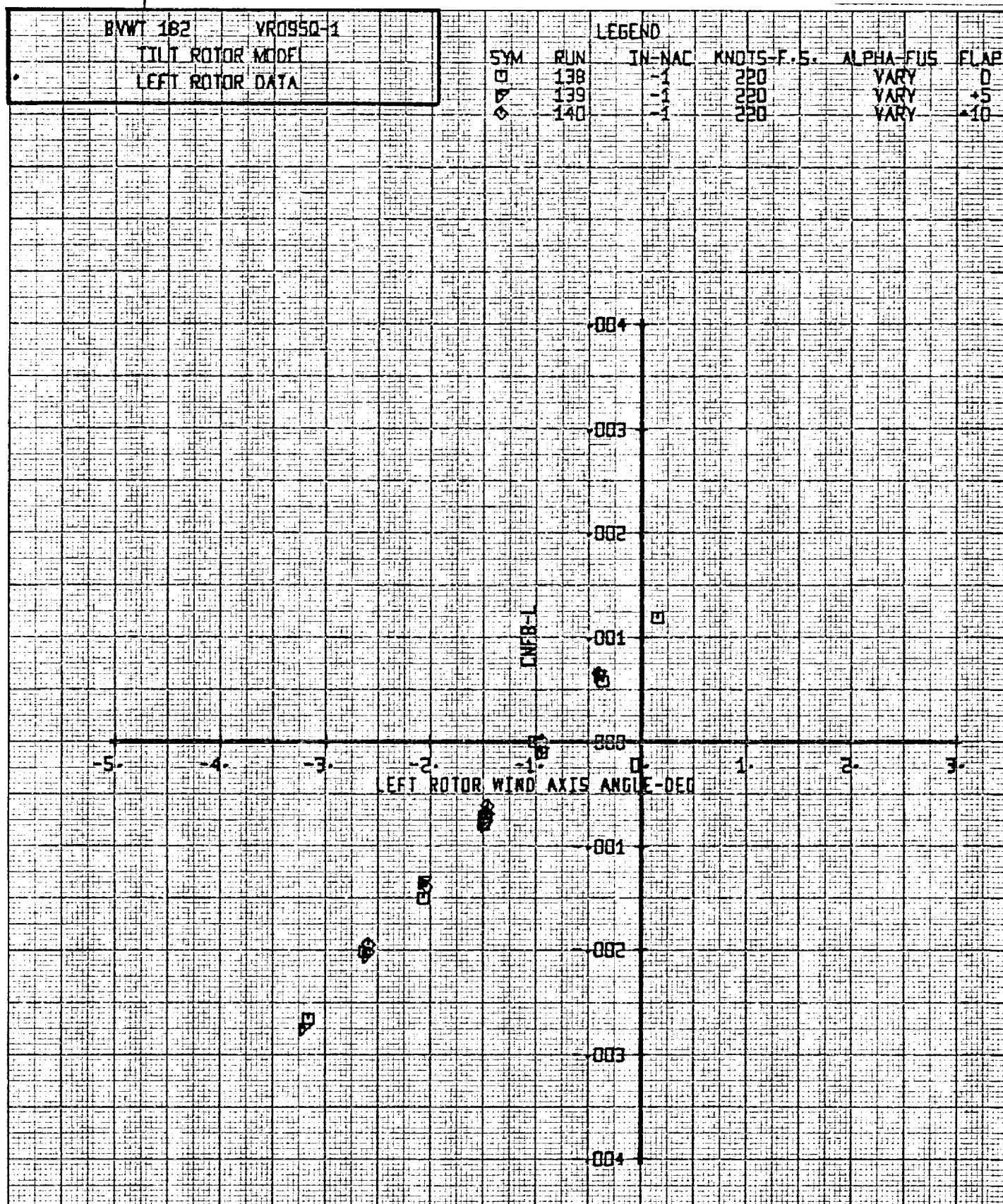


Figure 15-003. Left Rotor Normal Force Coefficient Versus Angle of Attack. $I_N = 1^\circ$ Full Scale Airspeed 220 Knots. $\delta_F = 0^\circ, 5^\circ, 10^\circ$

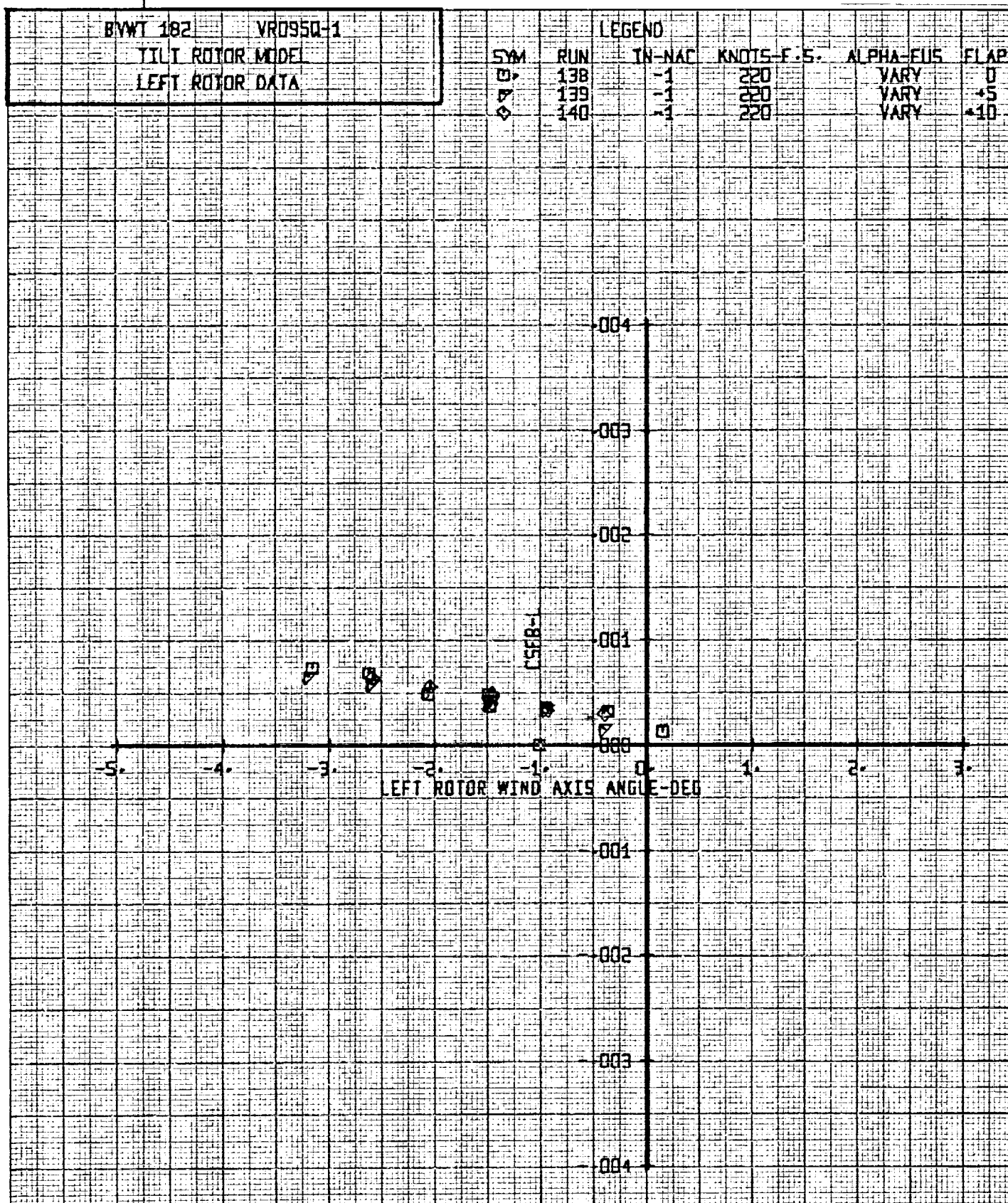
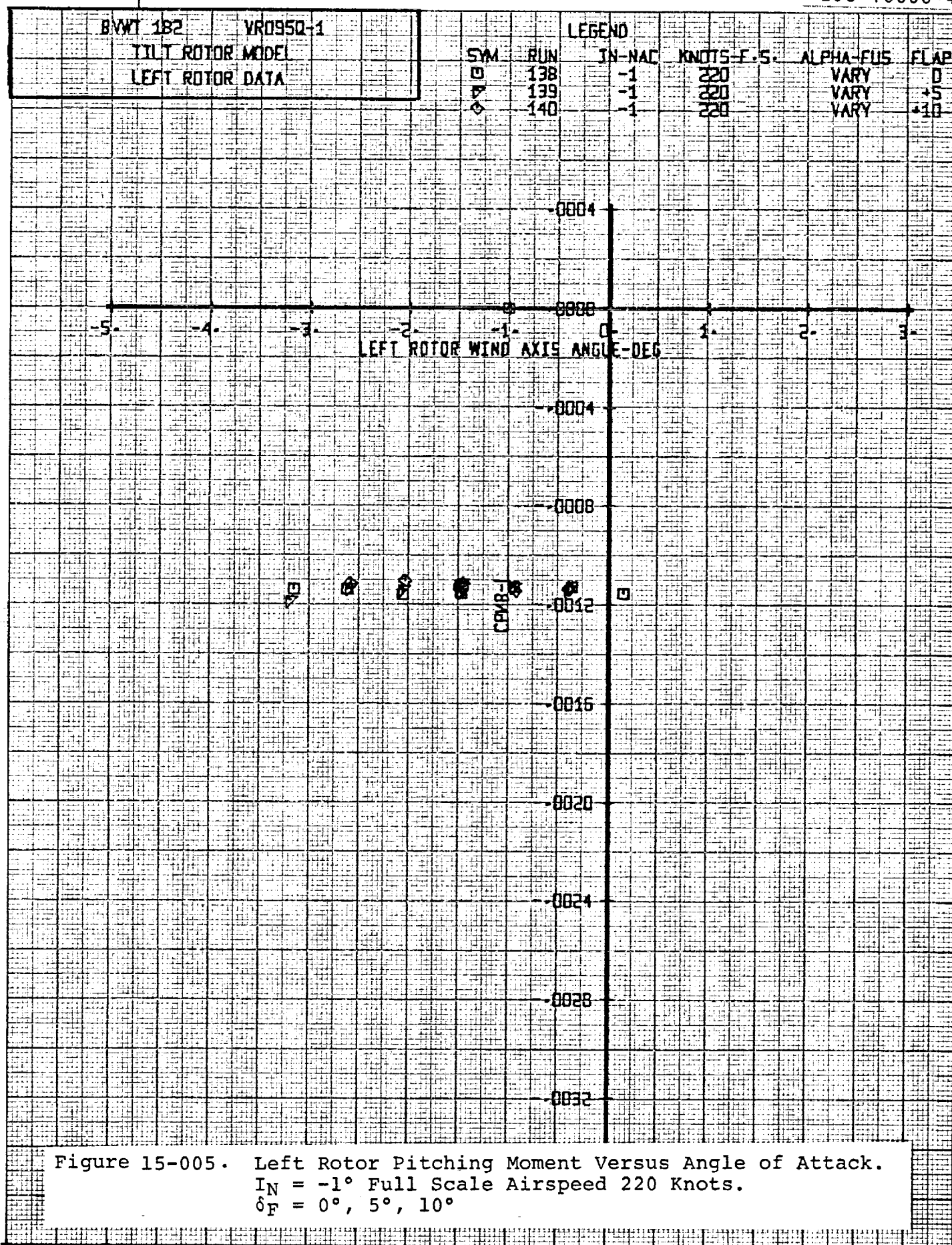
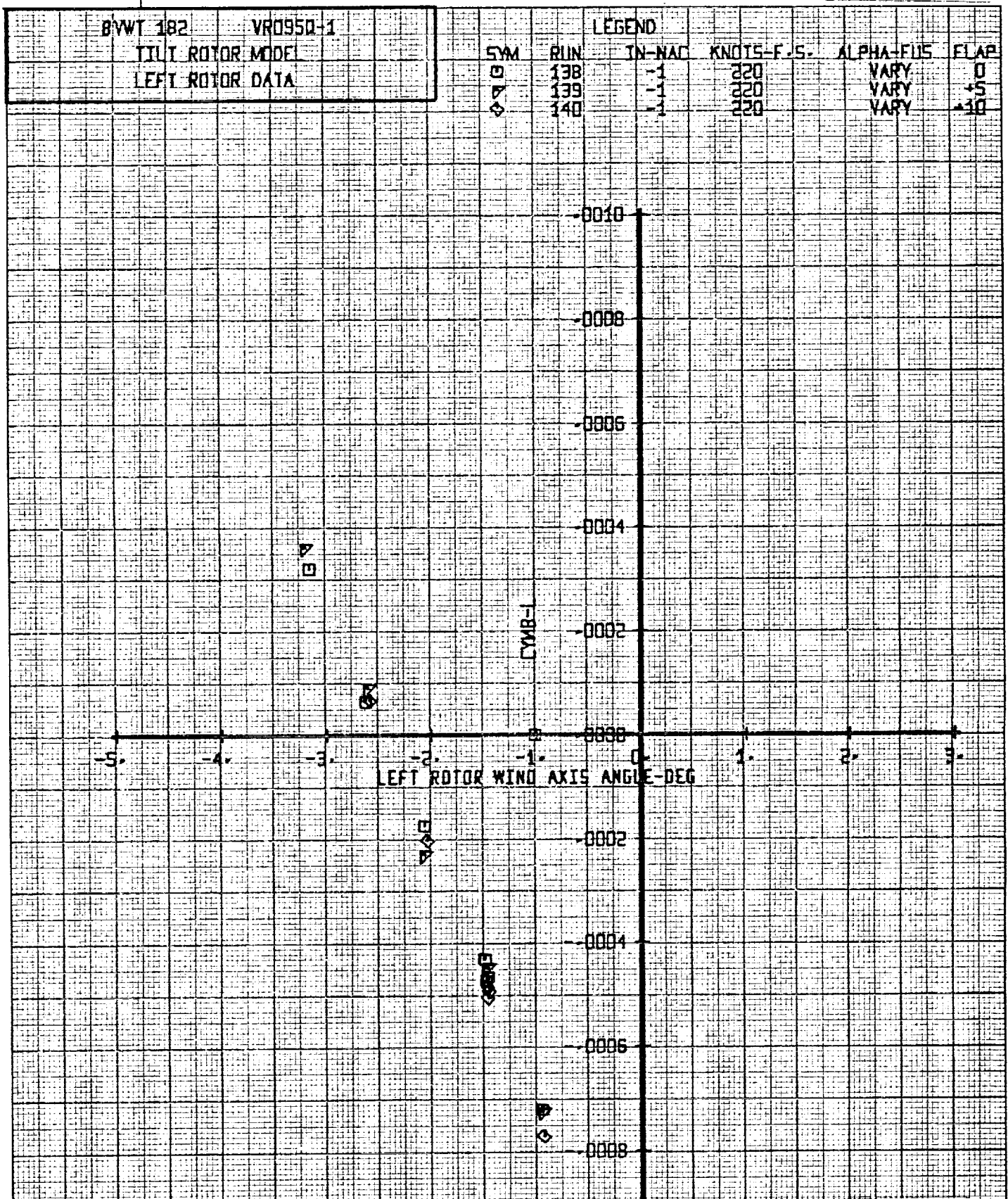


Figure 15-004. Left Rotor Side Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.
 $\delta_F = 0^\circ, 5^\circ, 10^\circ$





BYWT 182	VR095Q-1
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TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

RLIN

IN-NAC

KNO15-F.5.

ALPHA-FLU

FLAP

138

220

VARY

D

7

139

1

220

VARY

5

-140-

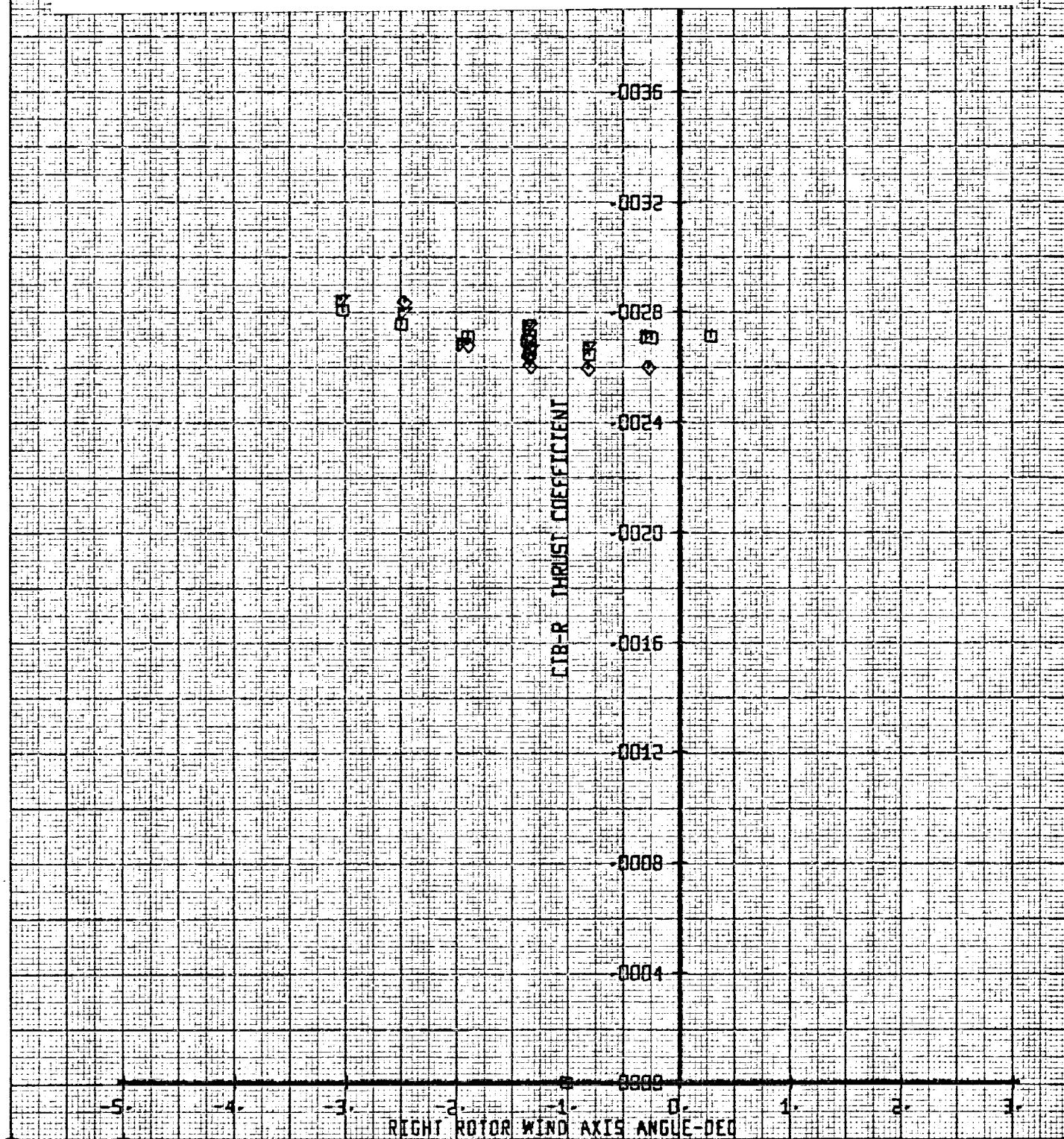
1. The first step is to identify the problem. In this case, the problem is that the company is not meeting its sales targets. The second step is to analyze the data. The third step is to develop a plan. The fourth step is to implement the plan. The fifth step is to evaluate the results.

220

PARY

10

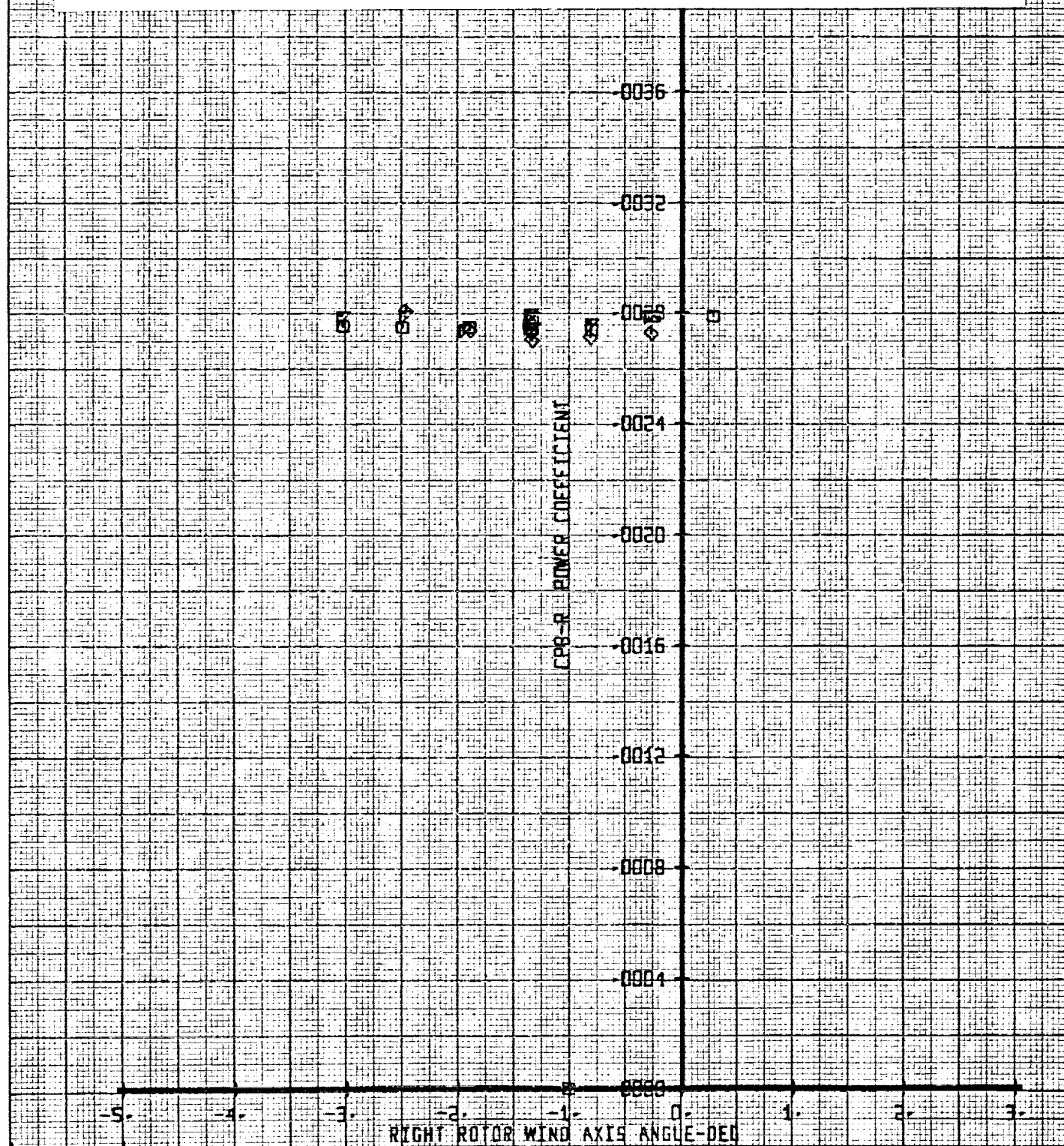
Figure 15-007. Right Rotor Thrust Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta_F = 0^\circ, 5^\circ, 10^\circ$



BVWT 182 VR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND					
SYM	RUN	IN-NAC	KNOTS-E.S.	ALPHA-FUS	FLAP
□	138	-1	220	VARY	0
▽	139	-1	220	VARY	+5
◇	140	-1	220	VARY	+10

Figure 15-008. Right Rotor Power Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.
 $\delta_F = 0^\circ, 5^\circ, 10^\circ$



226

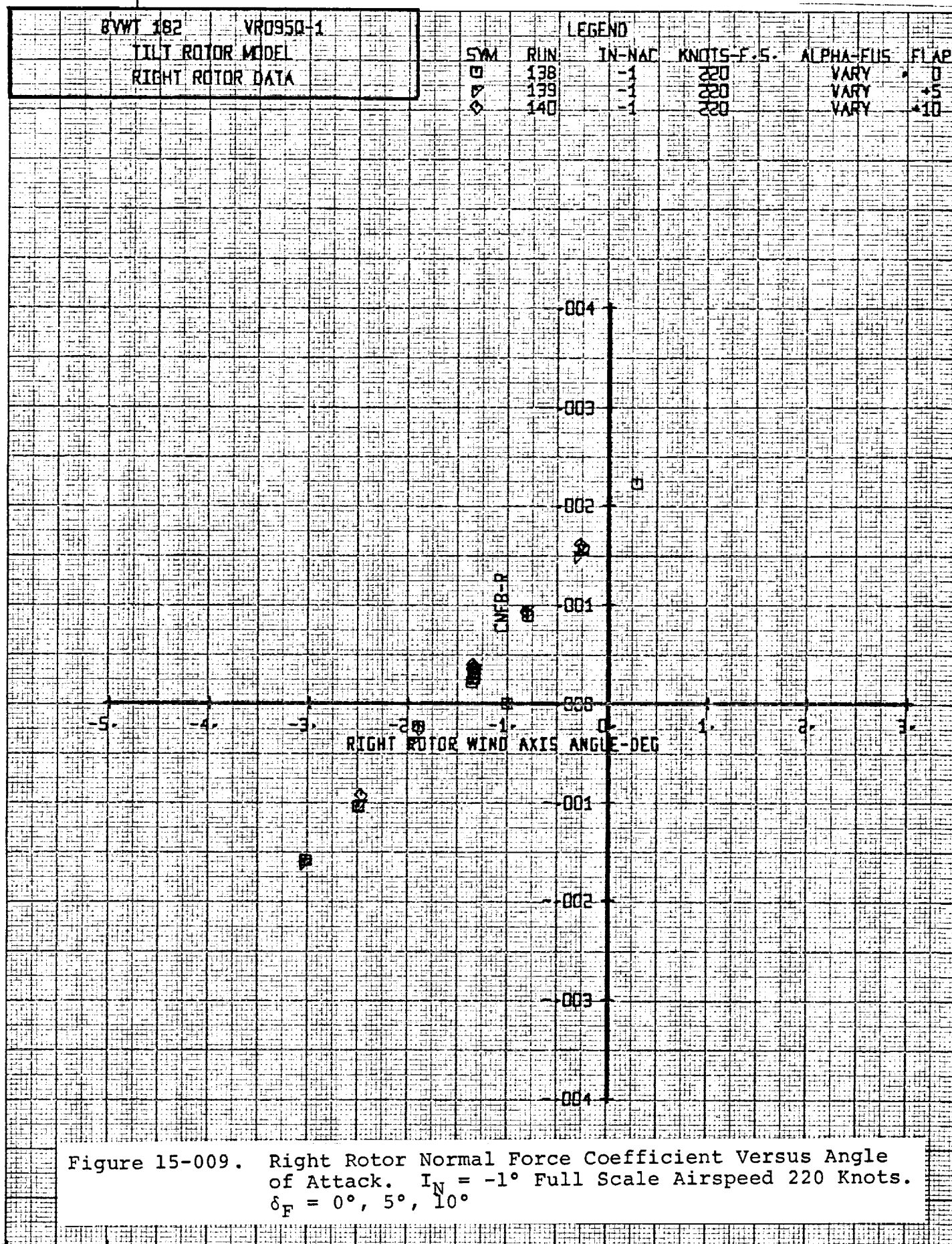


Figure 15-009. Right Rotor Normal Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta_F = 0^\circ, 5^\circ, 10^\circ$

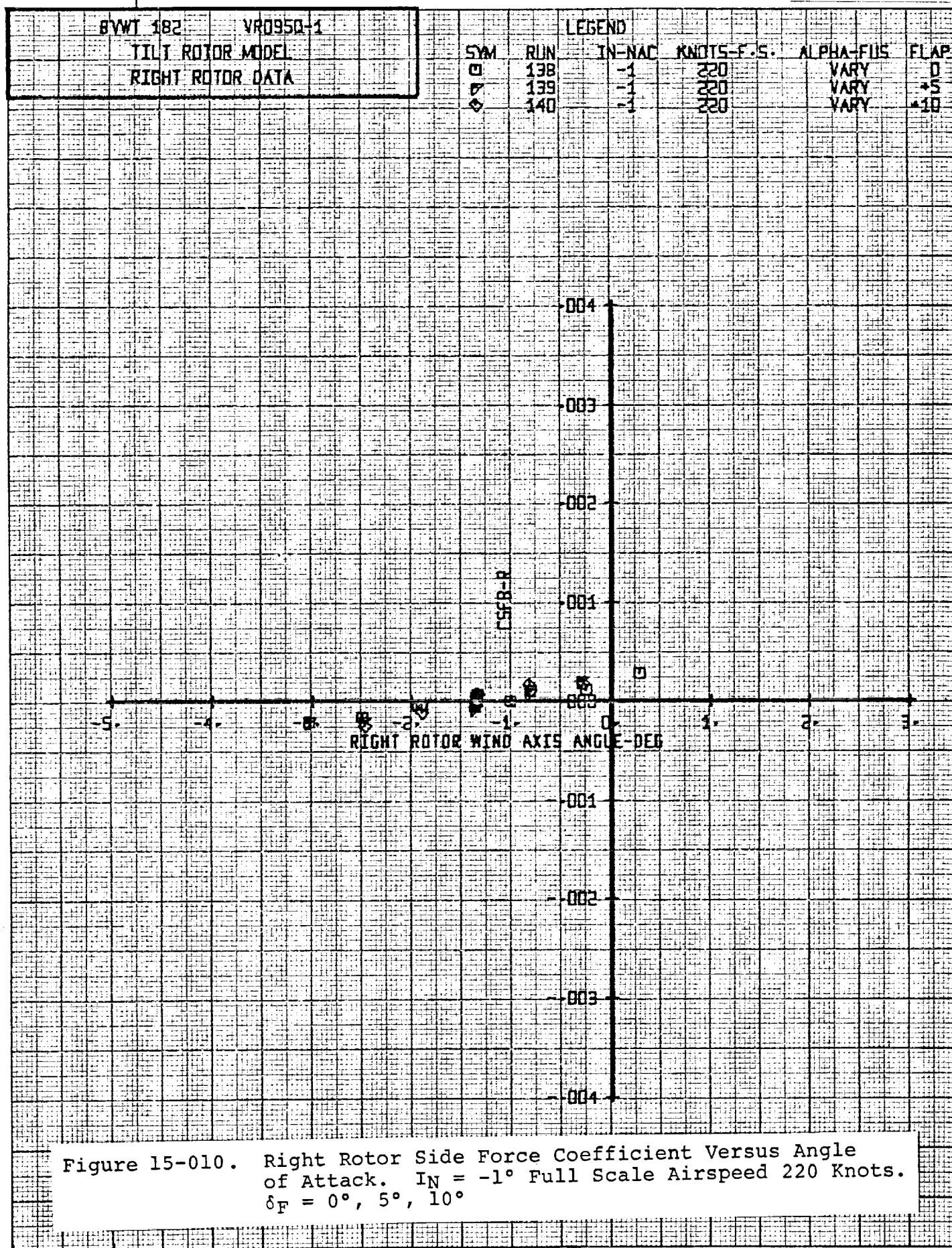


Figure 15-010. Right Rotor Side Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta_F = 0^\circ, 5^\circ, 10^\circ$

BVWT 182 VR0950-1

TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	138	-1	220	VARY	0
◊	139	-1	220	VARY	+5
◇	140	-1	220	VARY	+10

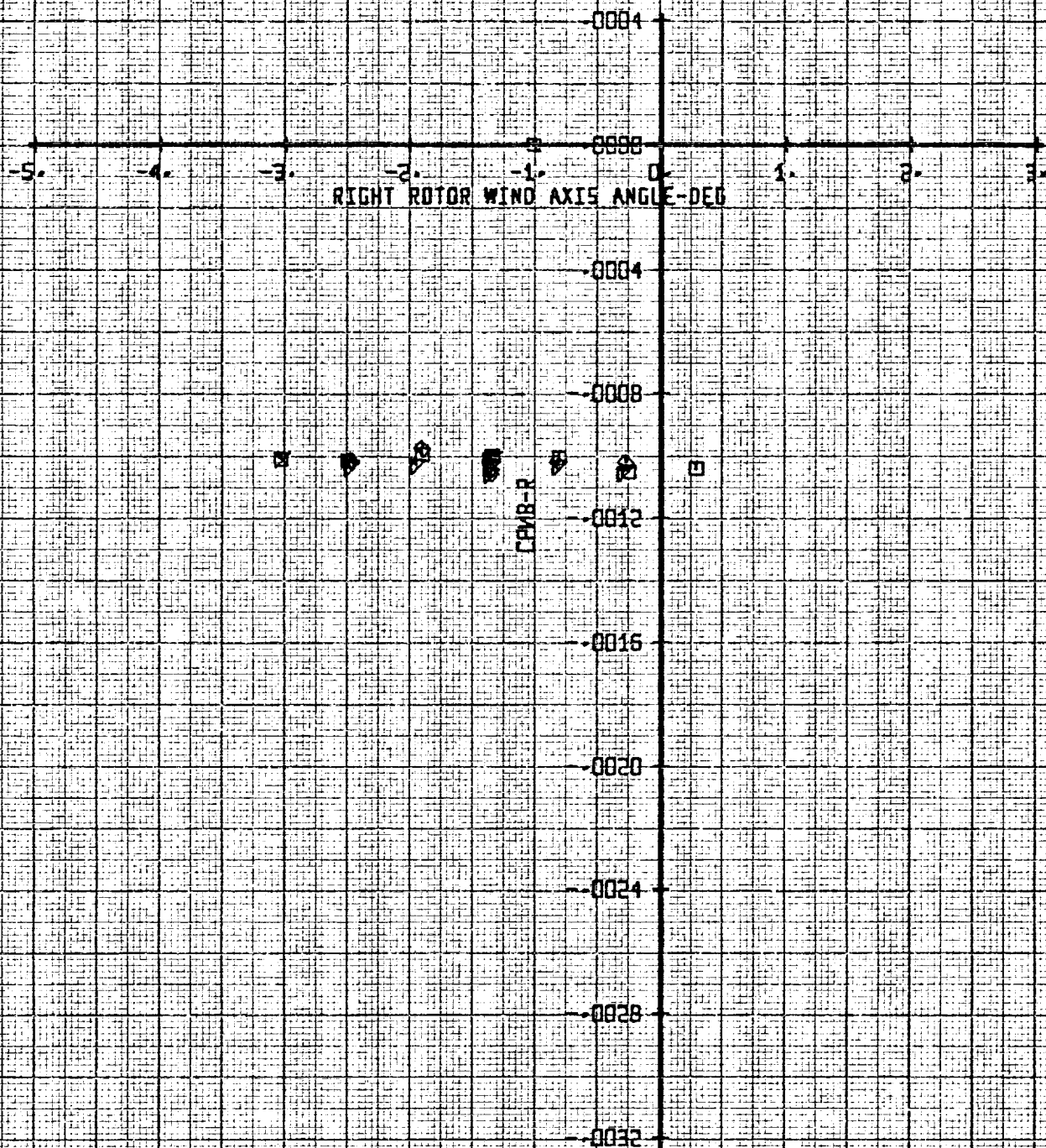


Figure 15-011. Right Rotor Pitching Moment Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta F = 0^\circ, 5^\circ, 10^\circ$

BVWT 182 VR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FLTS	FLAP
□	138	-1	220	VARY	0
△	139	-1	220	VARY	+5
◇	140	-1	220	VARY	+10

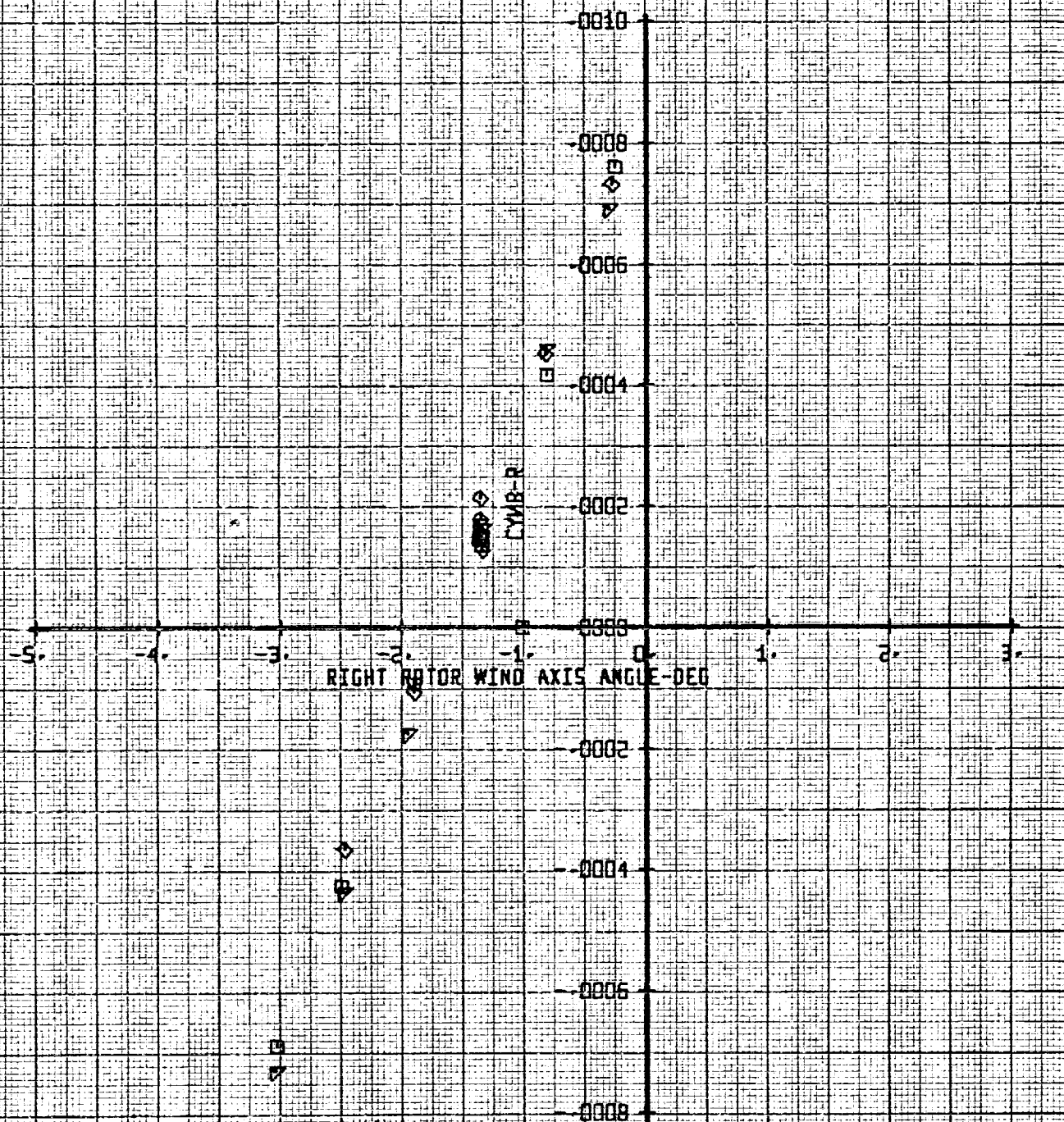
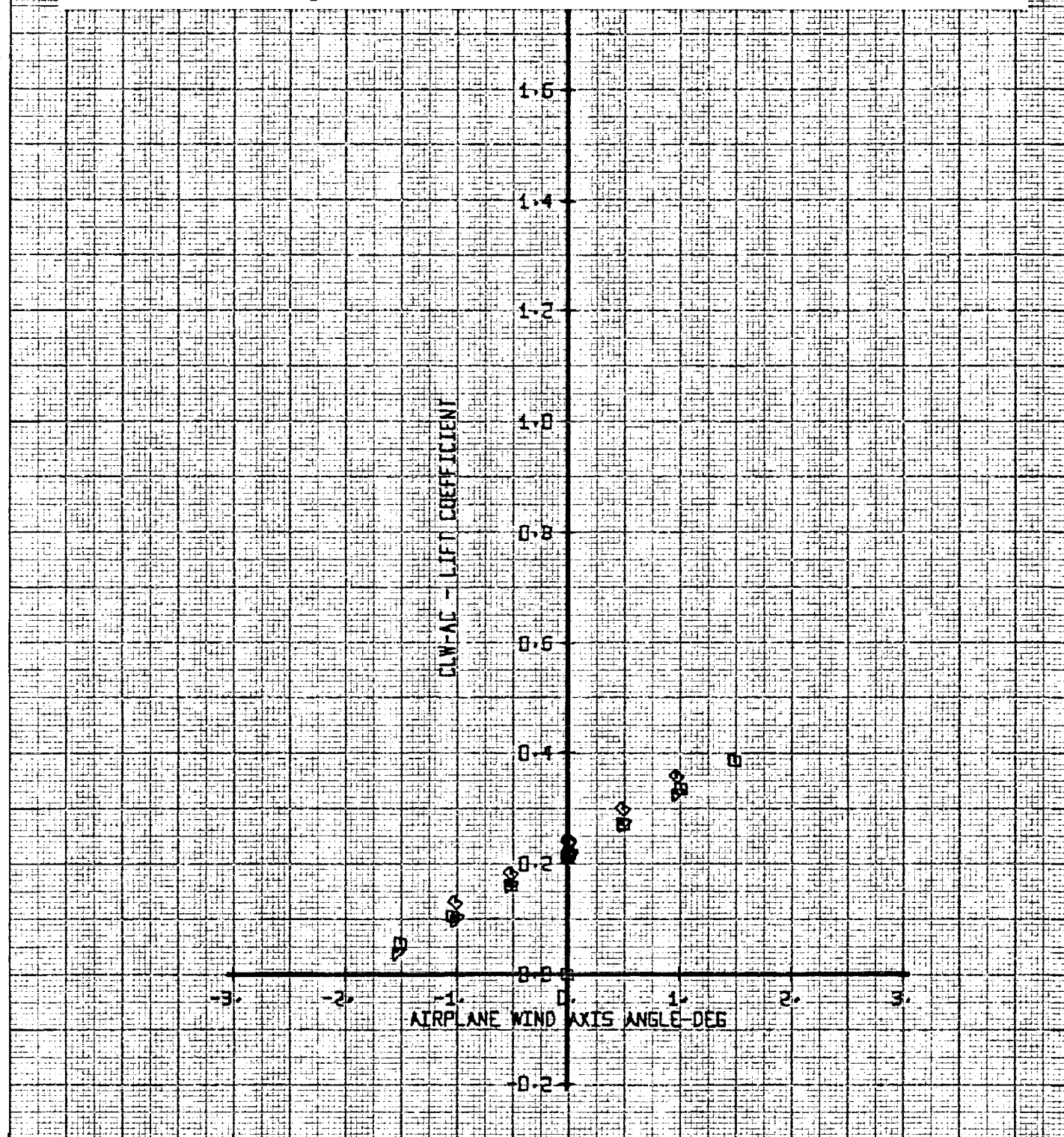


Figure 15-012. Right Rotor Yawing Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.
 $\delta F = 0^\circ, 5^\circ, 10^\circ$

BVWT 182		VR0950-1		LEGEND			
TILT ROTOR MODEL		SYM	RUN	IN-NAC	KNOTS-F-5.	ALPHA-FUS	FLAP
		□	138	-1	220	VARY	0
		◊	139	-1	220	VARY	+5
		◇	140	-1	220	VARY	+10

Figure 15-013. Aircraft Lift Coefficient Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.
 $\delta_F = 0^\circ, 5^\circ, 10^\circ$



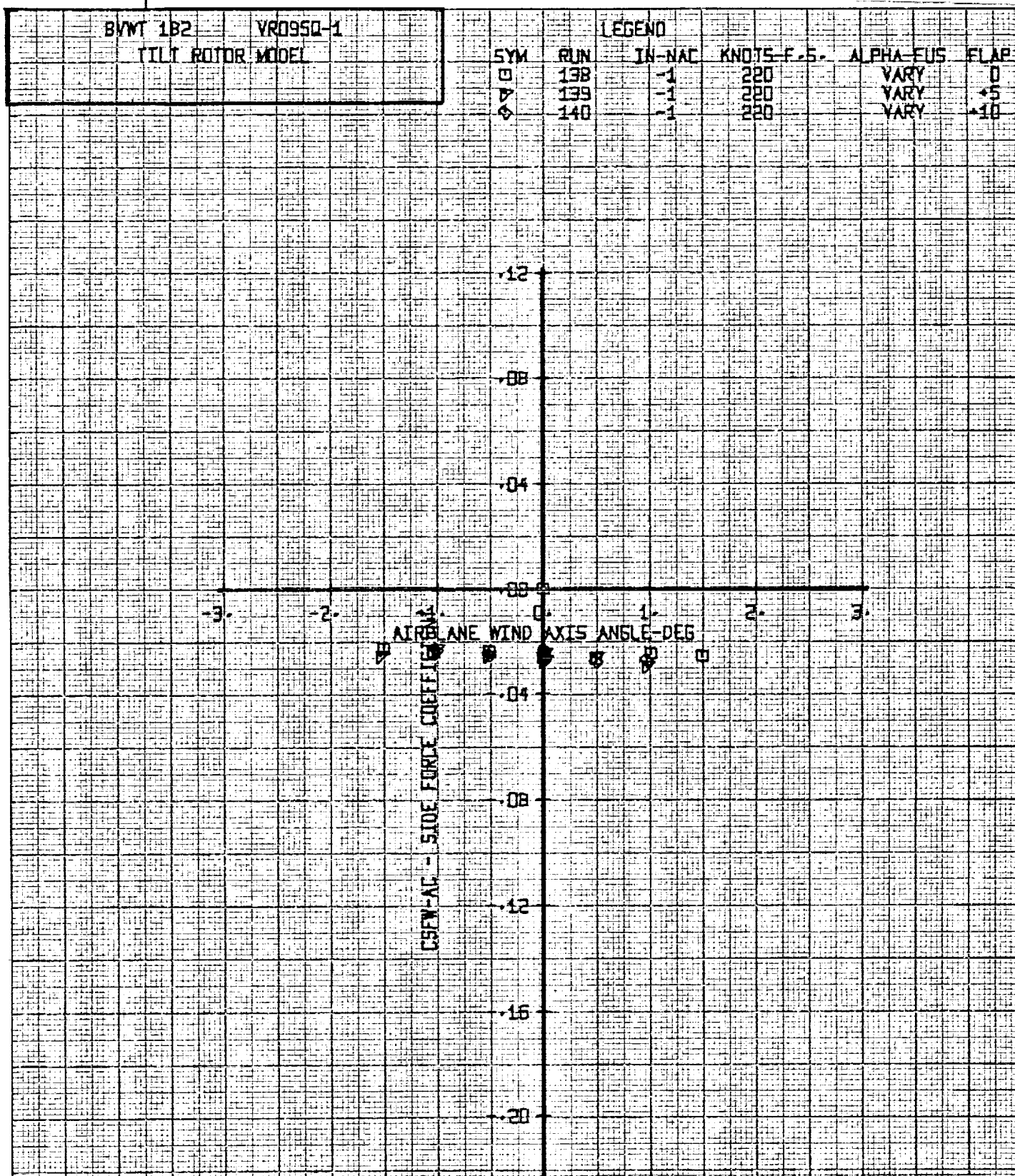


Figure 15-014. Aircraft Side Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta_F = 0^\circ, 5^\circ, 10^\circ$

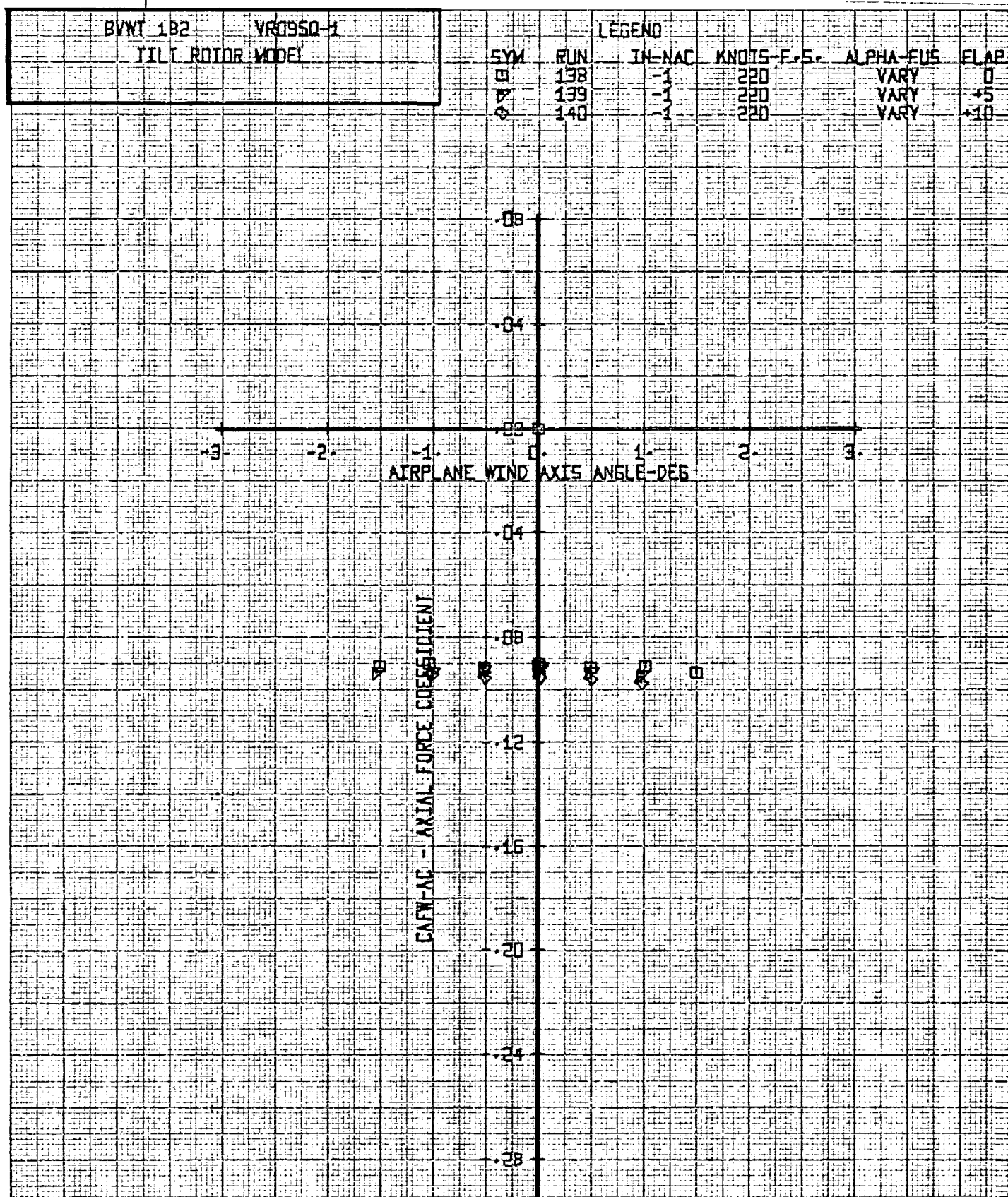


Figure 15-015. Aircraft Axial Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta_F = 0^\circ, 5^\circ, 10^\circ$

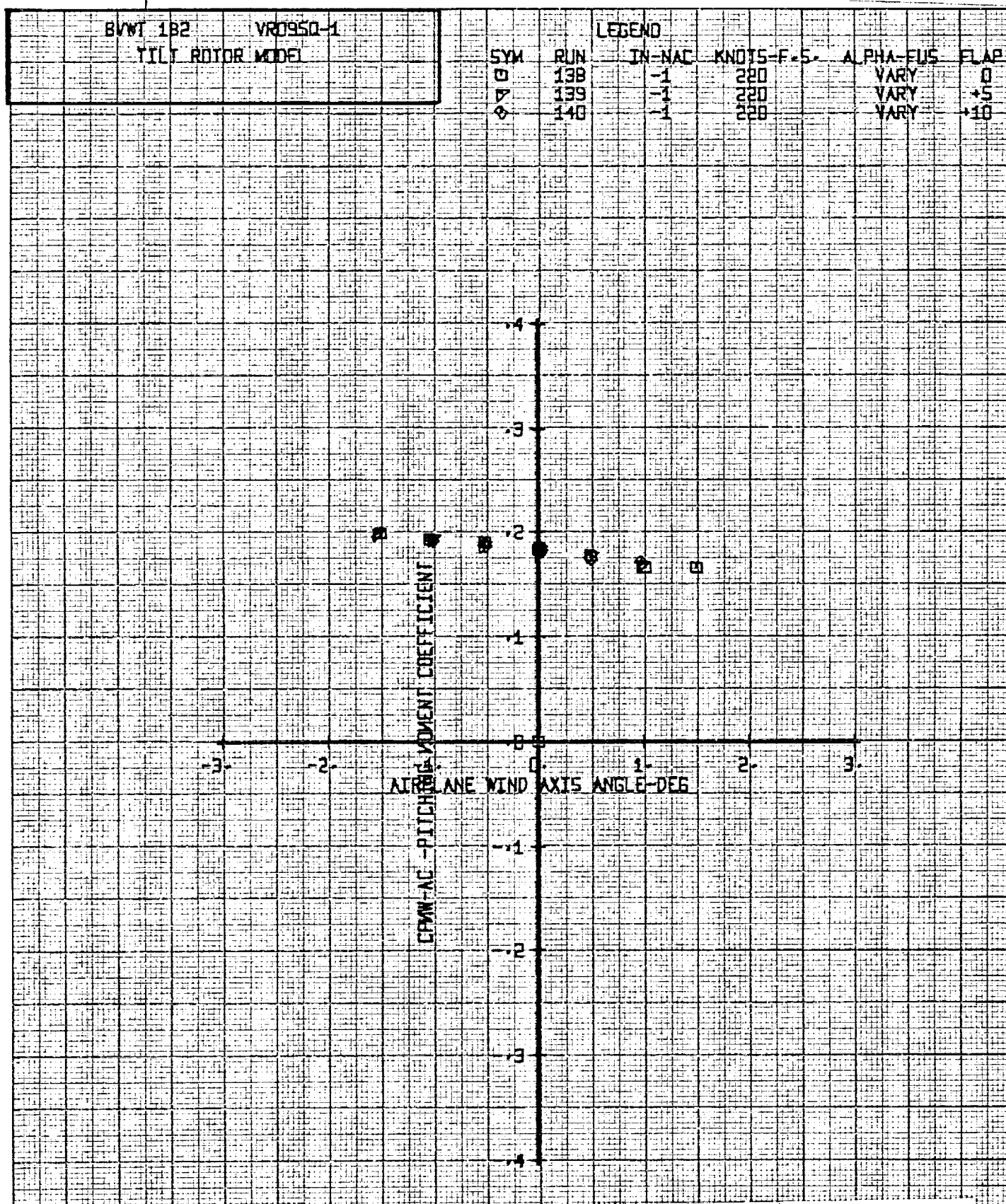


Figure 15-016 . Aircraft Pitching Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.
 $\delta_F = 0^\circ, 5^\circ, 10^\circ$

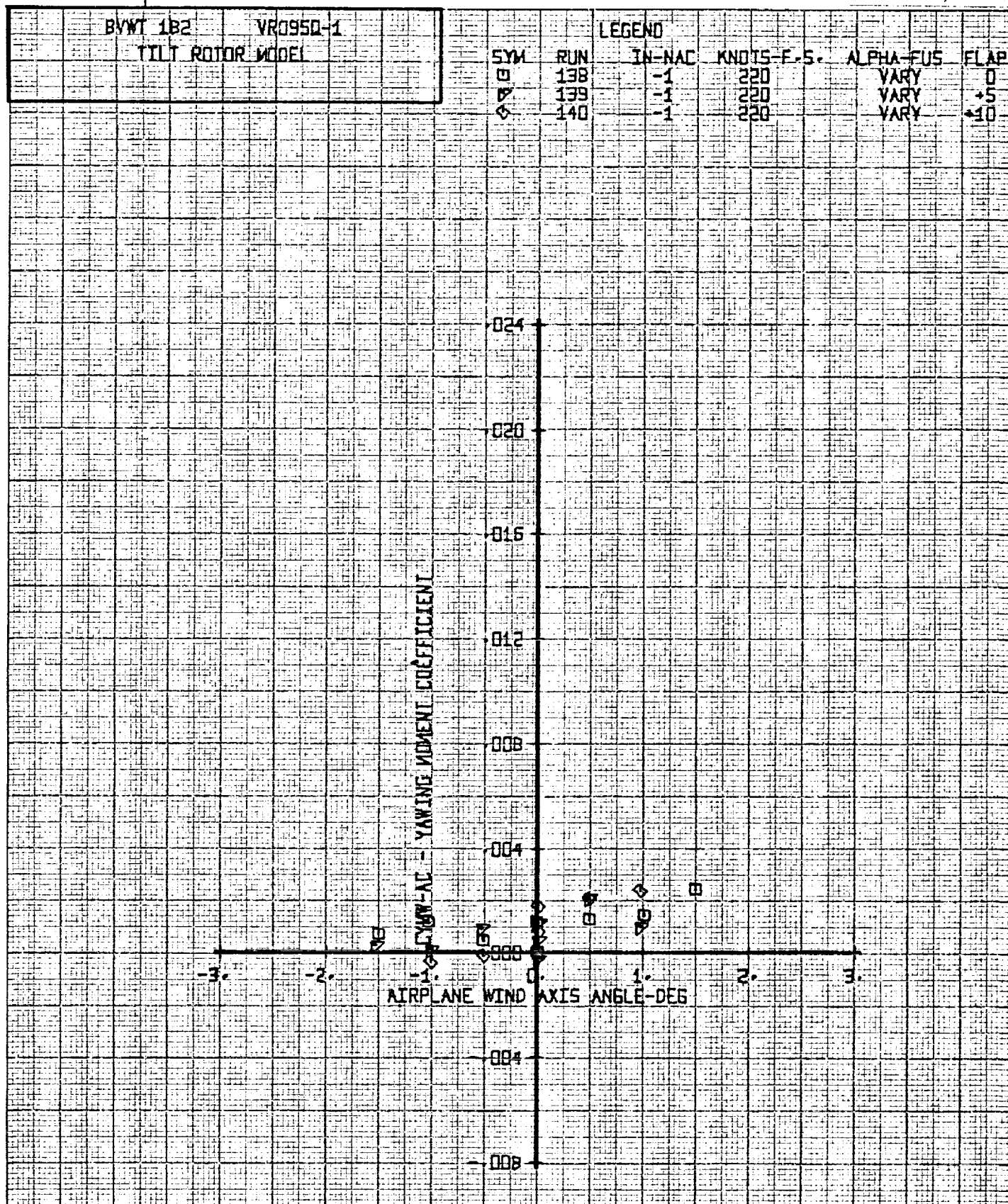


Figure 15-017. Aircraft Yawing Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.
 $\delta_F = 0^\circ, 5^\circ, 10^\circ$

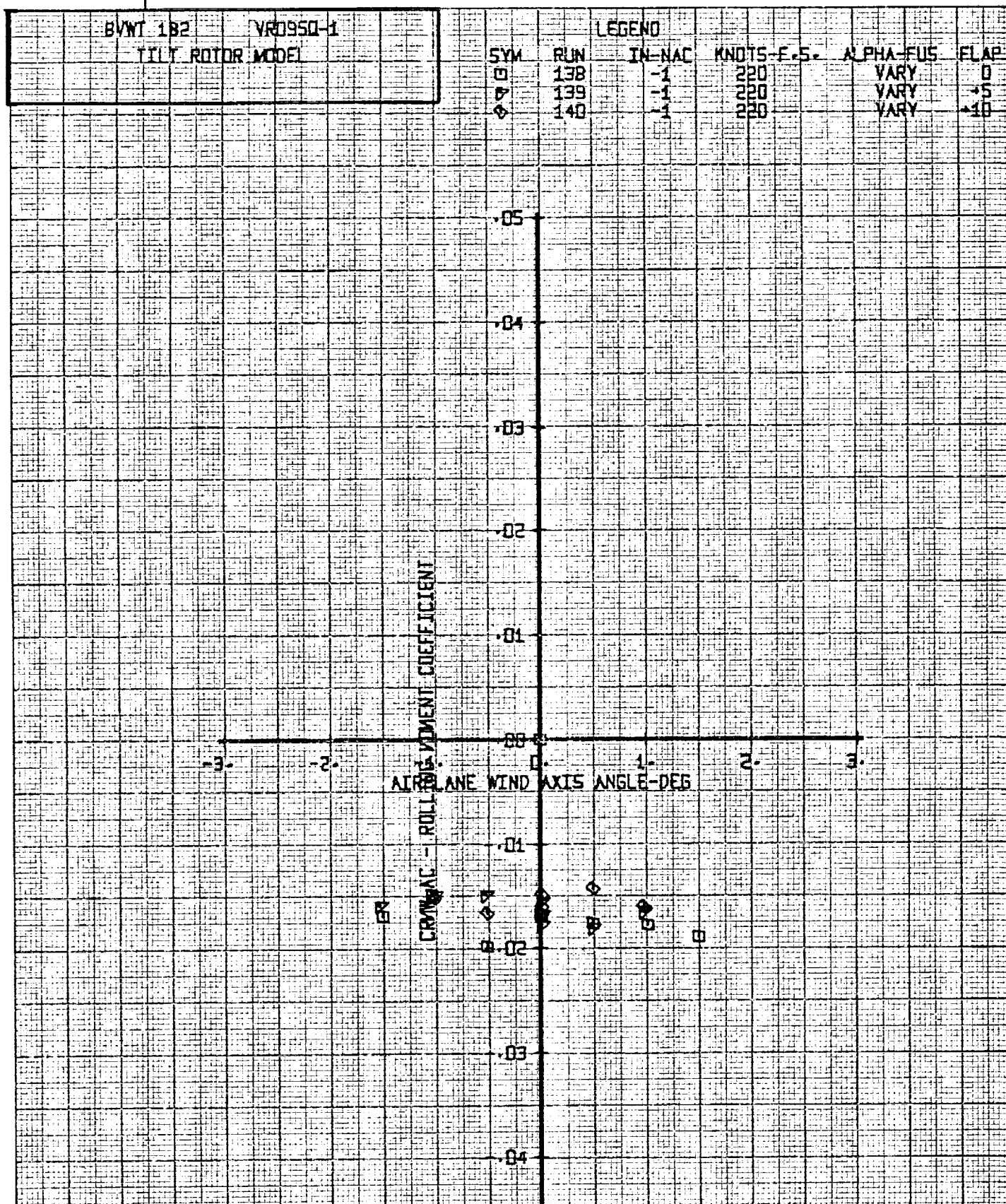


Figure 15-018. Aircraft Rolling Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.
 $\delta_F = 0^\circ, 5^\circ, 10^\circ$

BVWT 182 VR0950-1

TILT ROTOR MODEL
LEFT ROTOR DATASYM
□
△
◇RUN
138
139
140

LEGEND

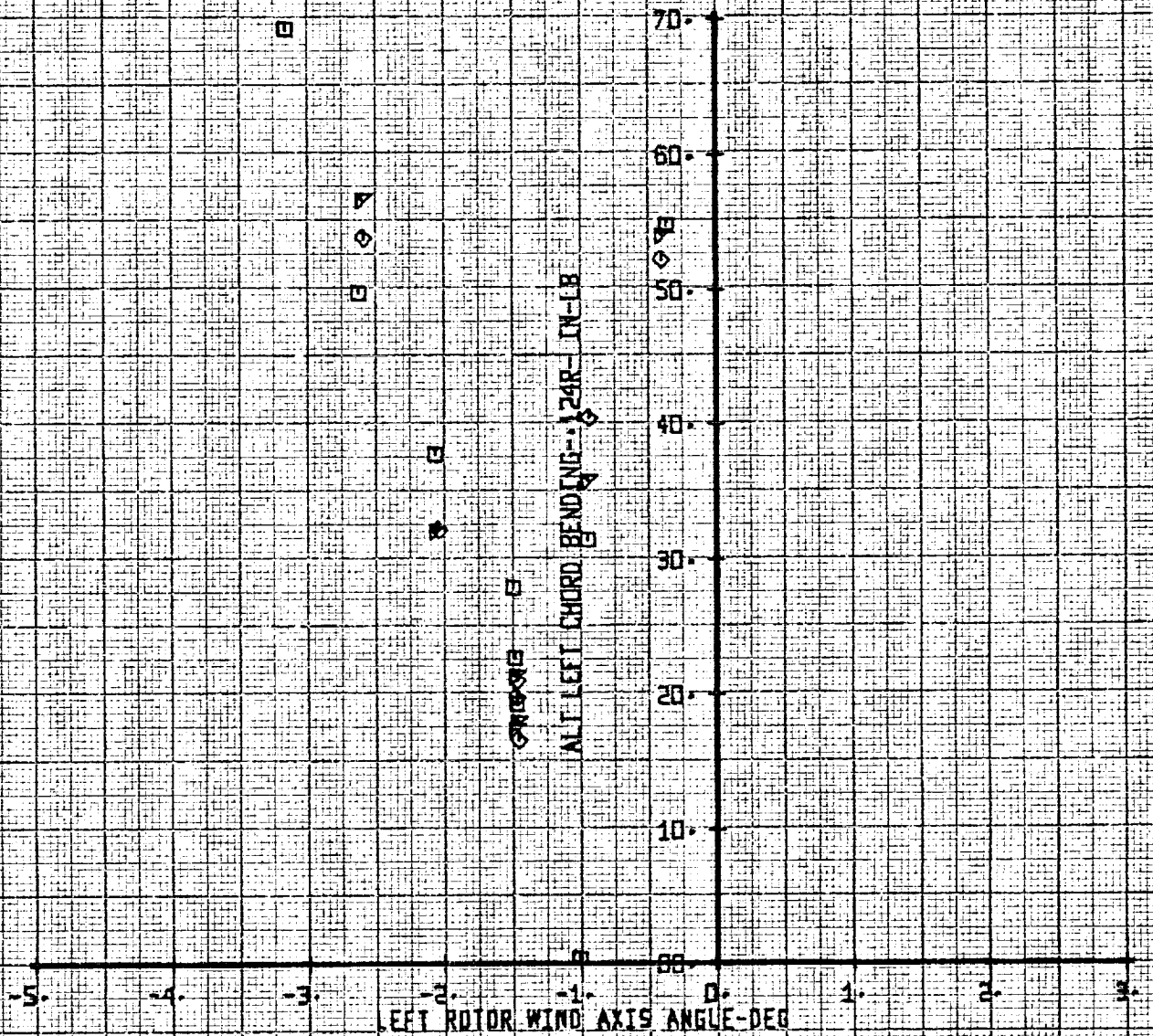
IN-NAE
-1
-1
-1KNOTS-F.S.
220
220
220ALPHA-FUS
VARY
VARY
VARYFLAP
0
+5
+10

Figure 15-019. Alt. Left Chord Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta_F = 0^\circ, 5^\circ, 10^\circ$

BVMT 182 VR0950-1

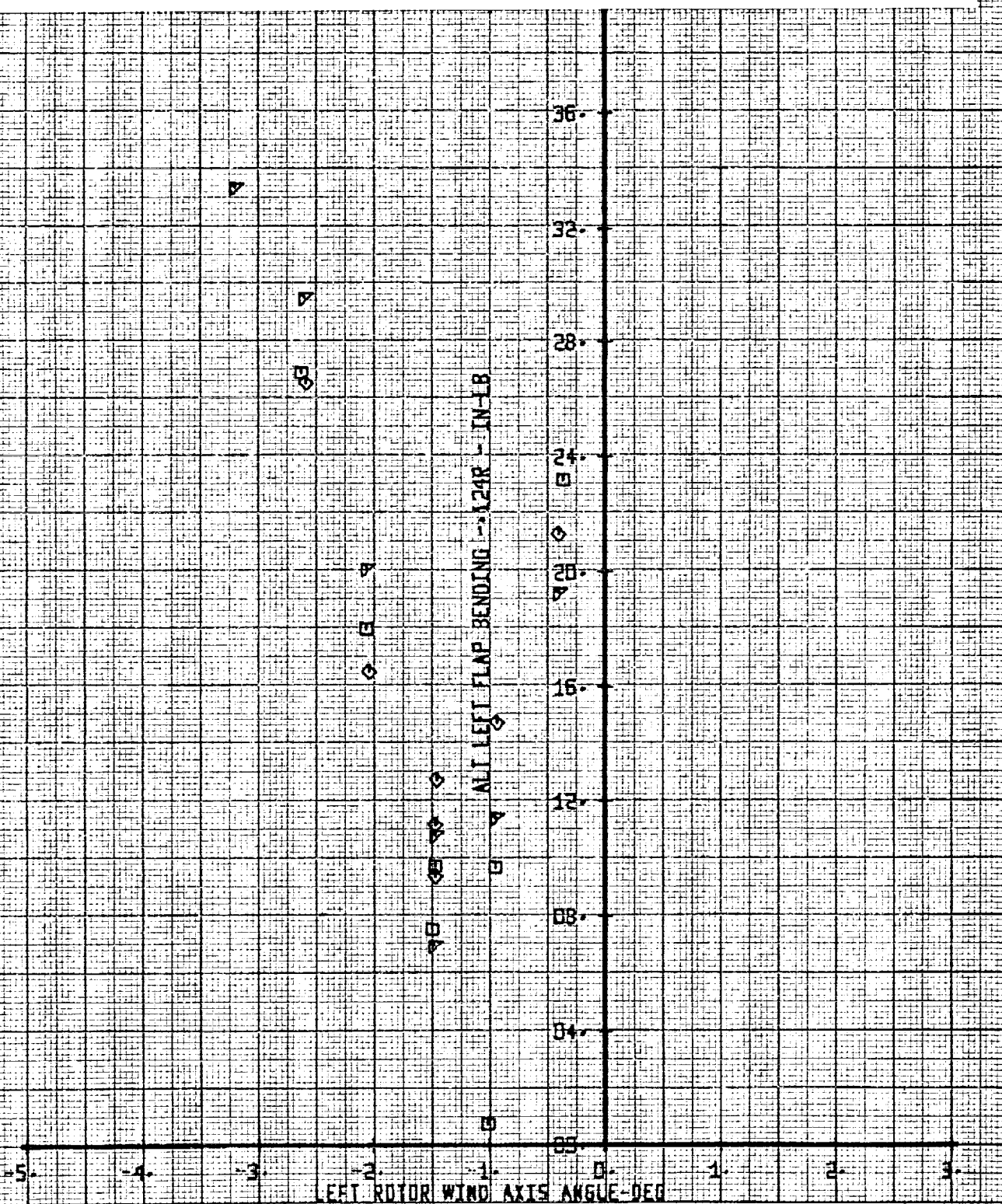
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F-S	ALPHA-FUS	FLAP
△	138	-1	220	VARY	0
◇	139	-1	220	VARY	+5
◇	140	-1	220	VARY	+10

Figure 15-020. Alt. Left Flap Bending Versus Rotor Angle of Attack. $IN = -1^\circ$ Full Scale Airspeed 220 Knots.
 $\delta_F = 0^\circ, 5^\circ, 10^\circ$



BWWT 182	YR0950-1
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TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KN015-F-5

ALPHA-FLU

FLAE

2

138

[illegible]

VARY

10

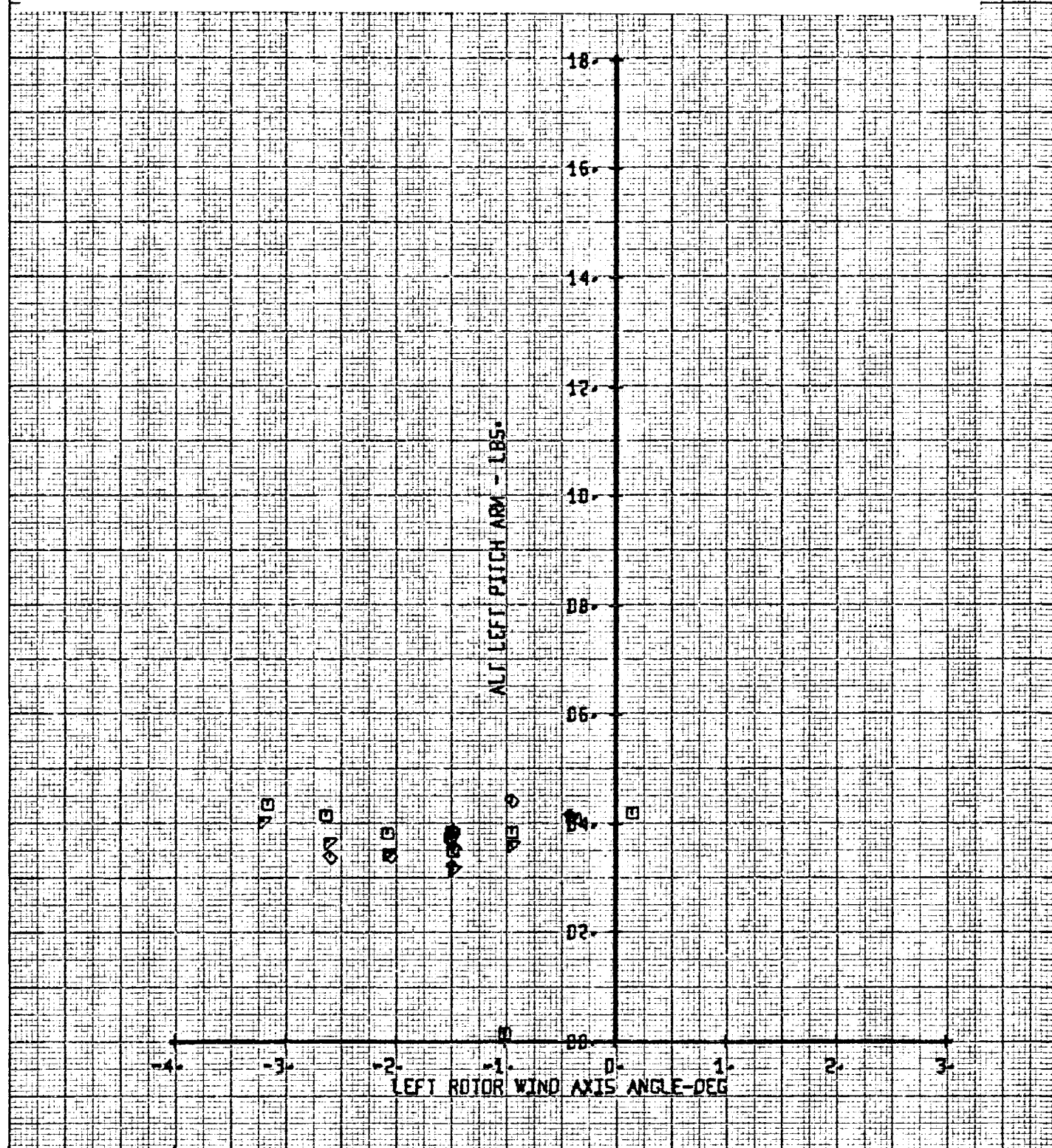
10

139
140

Figure 1

VARY
VARY

Figure 15-021. Alt. Left Pitch Link Load Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta_F = 0^\circ, 5^\circ, 10^\circ$



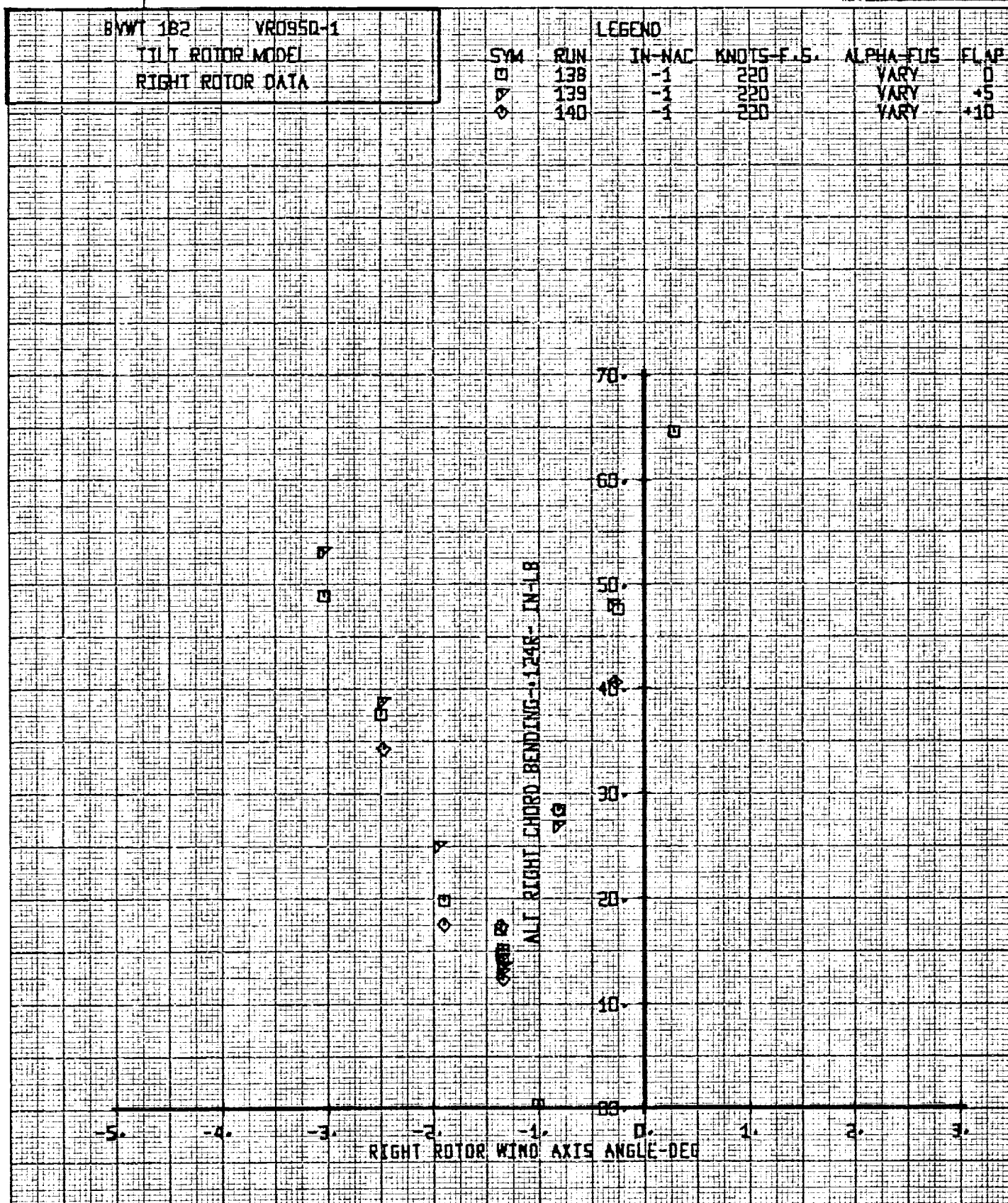


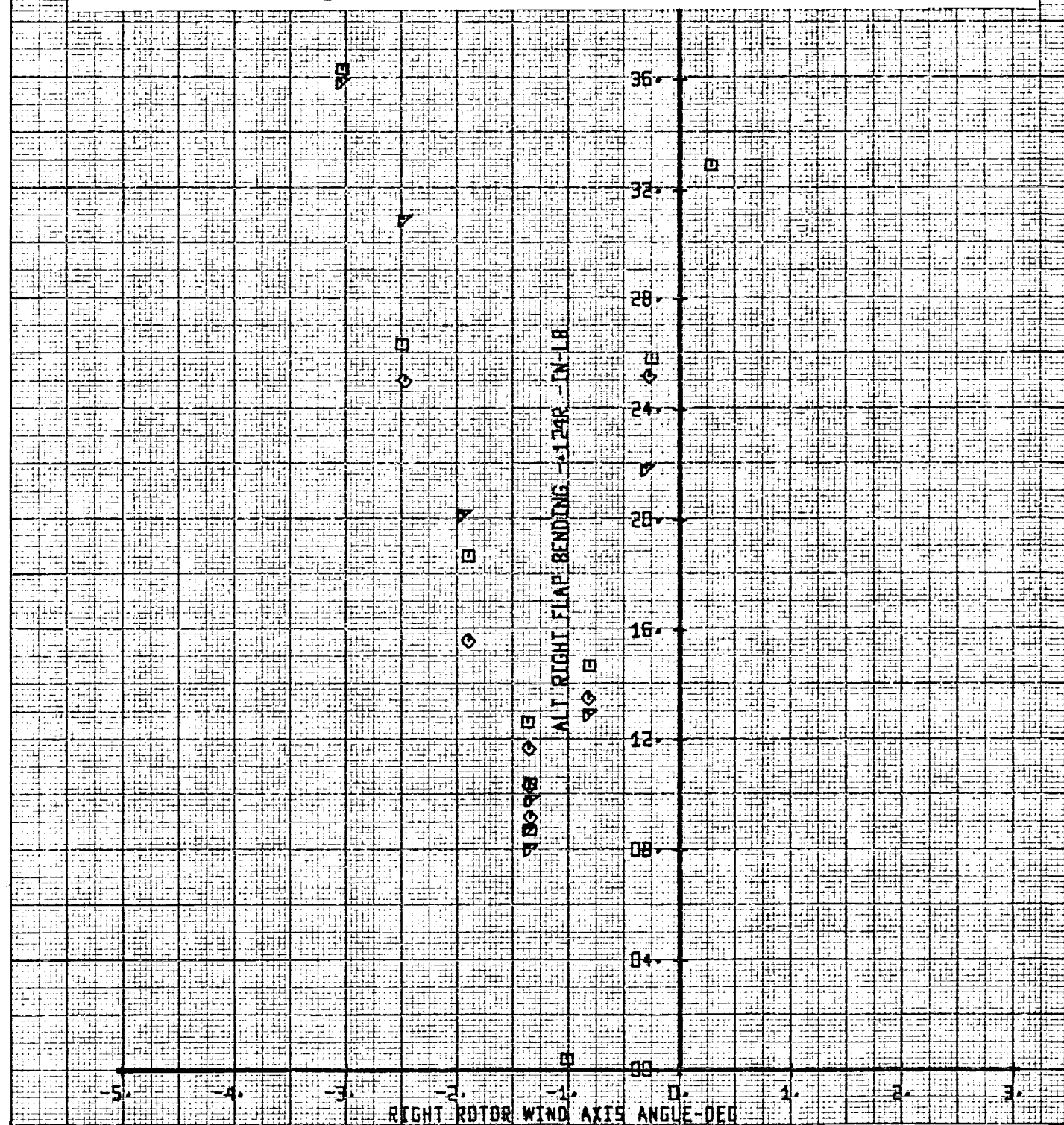
Figure 15-022. Alt. Right Chord Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta_F = 0^\circ, 5^\circ, 10^\circ$

BVWT 182 VR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	138	-1	220	VARY	0
▽	139	-1	220	VARY	+5
◇	140	-1	220	VARY	+10

Figure 15-023. Alt. Right Flap Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.
 $\delta_F = 0^\circ, 5^\circ, 10^\circ$



BWWT 182 VR095Q-1

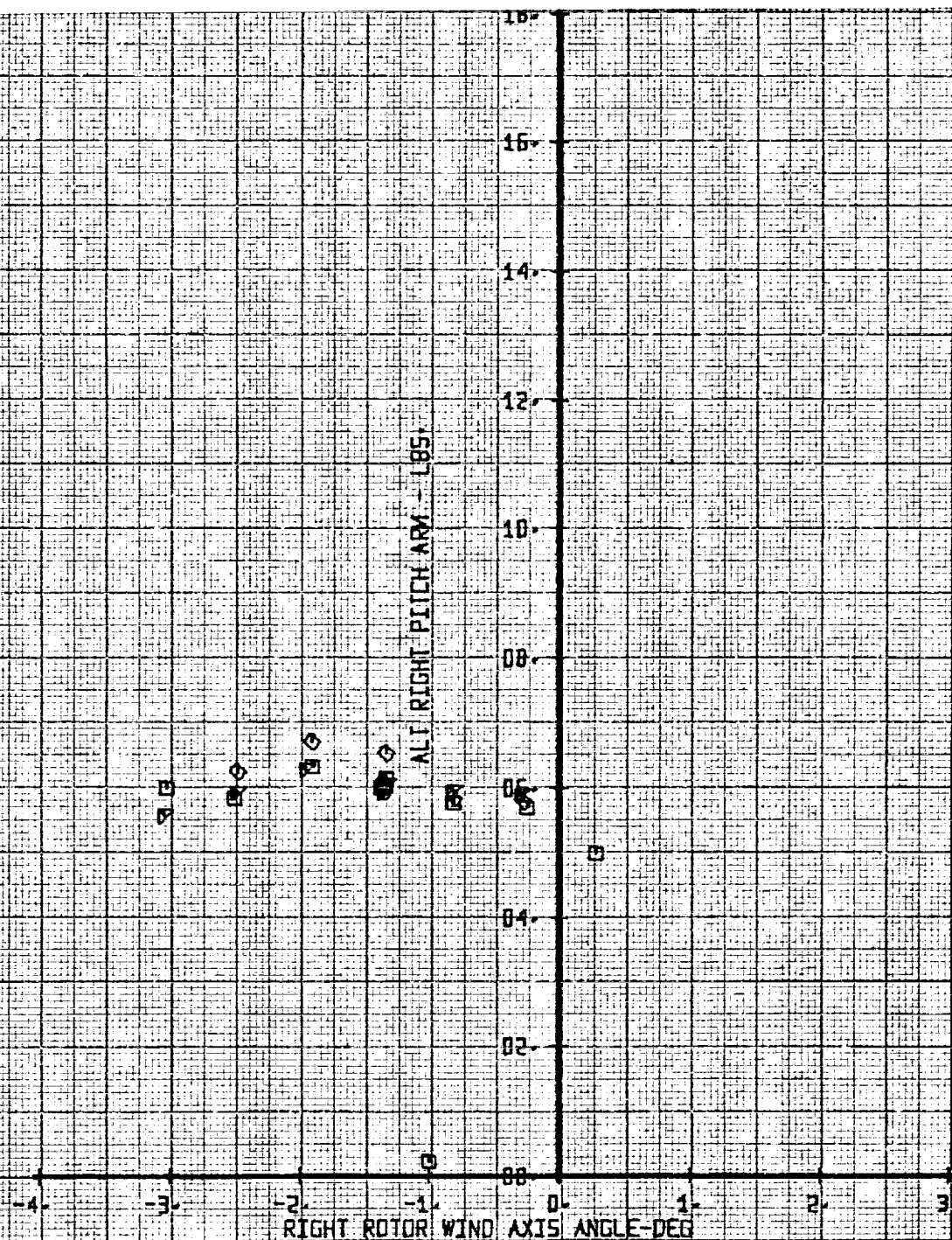
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F+5	ALPHA-FUS	FLAP
□	138	-1	220	VARY	0
▽	139	-1	220	VARY	+5
◇	140	-1	220	VARY	+10

Figure 15-024. Alt. Right Pitch Link Load Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots. $\delta F = 0^\circ, 5^\circ, 10^\circ$



BYWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

141

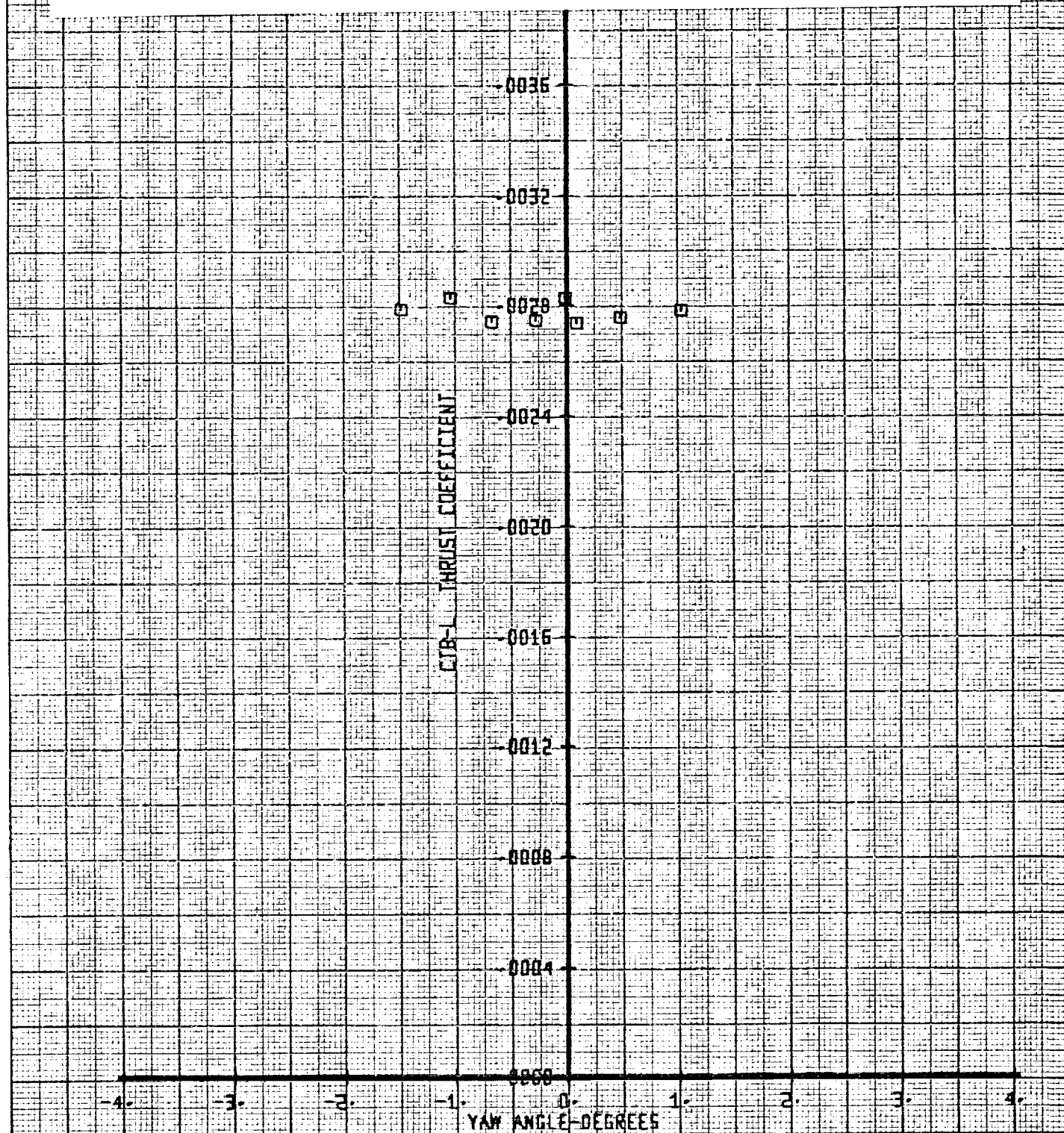
-1

220

0

0

Figure 15-025. Left Rotor Thrust Coefficient Versus Yaw Angle γ Degrees. $\text{IN} = -1^\circ$ Full Scale Airspeed 220 Knots.



BVWT 182	VR0950-1
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TIUT ROTOR MODEL

LEFT ROTOR DATA	
1	1
2	2
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99	99
100	100

LEGEND

5M

RLN

IN-NAC

KN015-F-5.

ALPHA-FIIS

FLAP

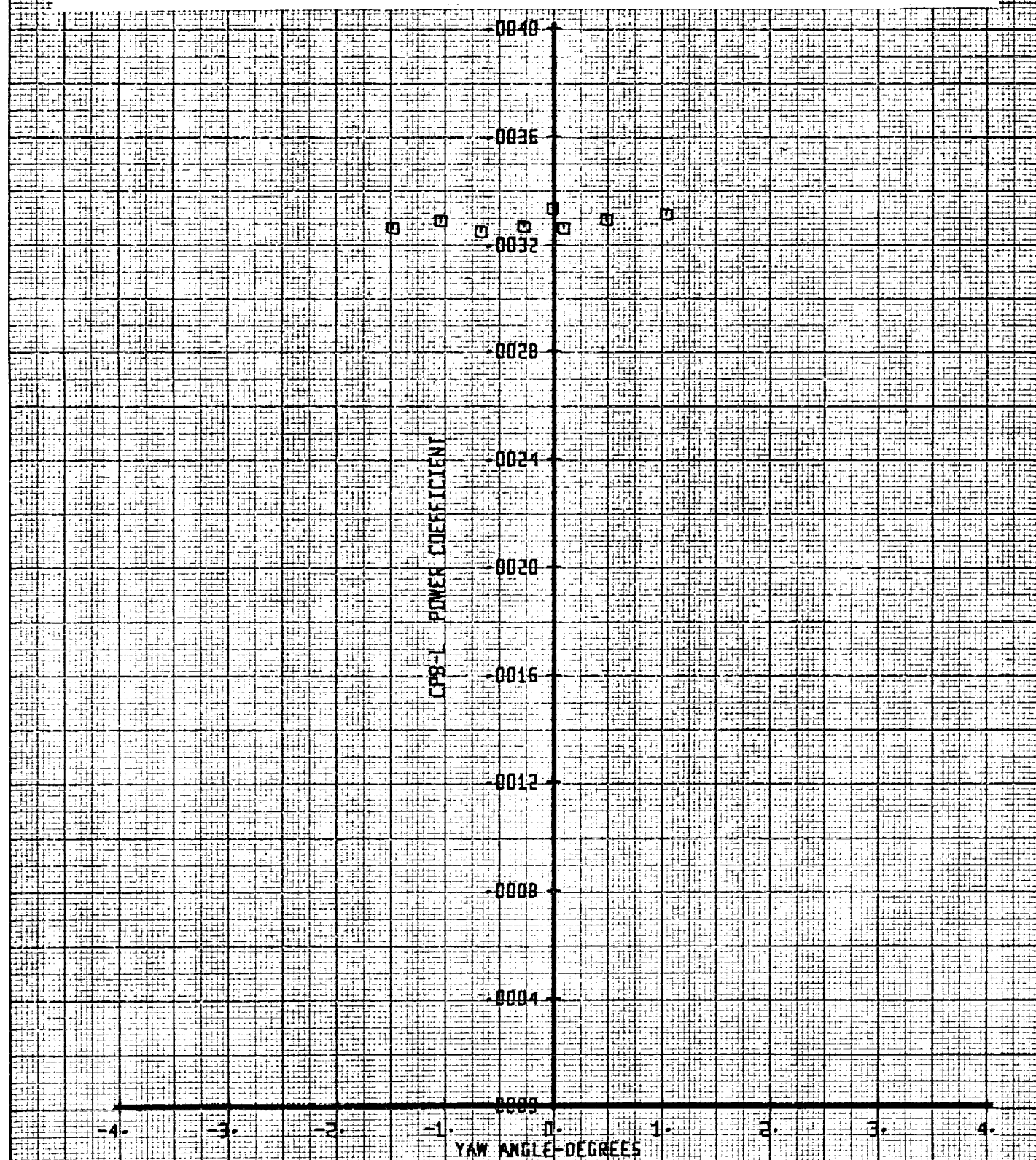
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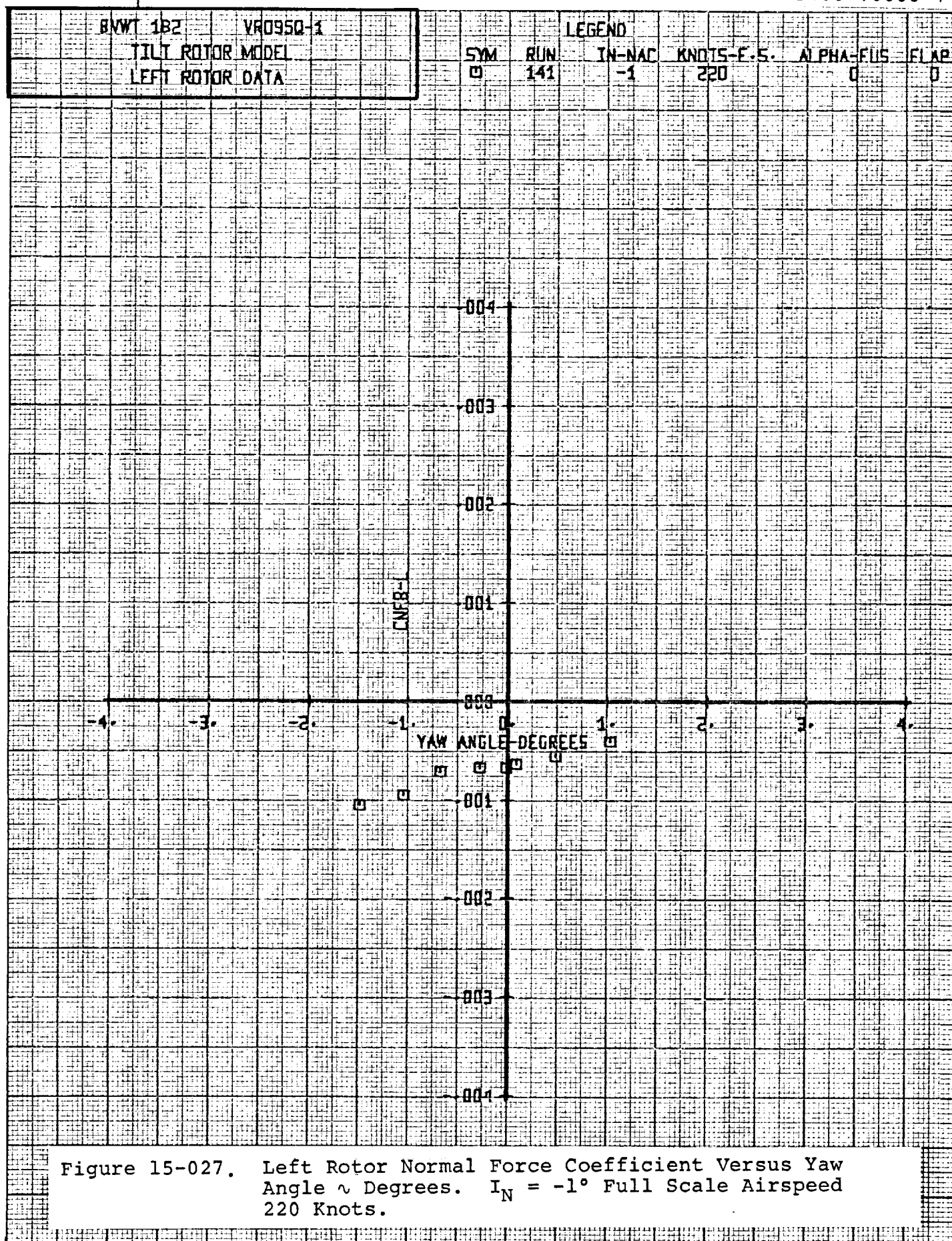
141

220

1

Figure 15-026. Left Rotor Power Coefficient Versus Yaw Angle α Degrees. $\text{IN} = -1^\circ$ Full Scale Airspeed 220 Knots.





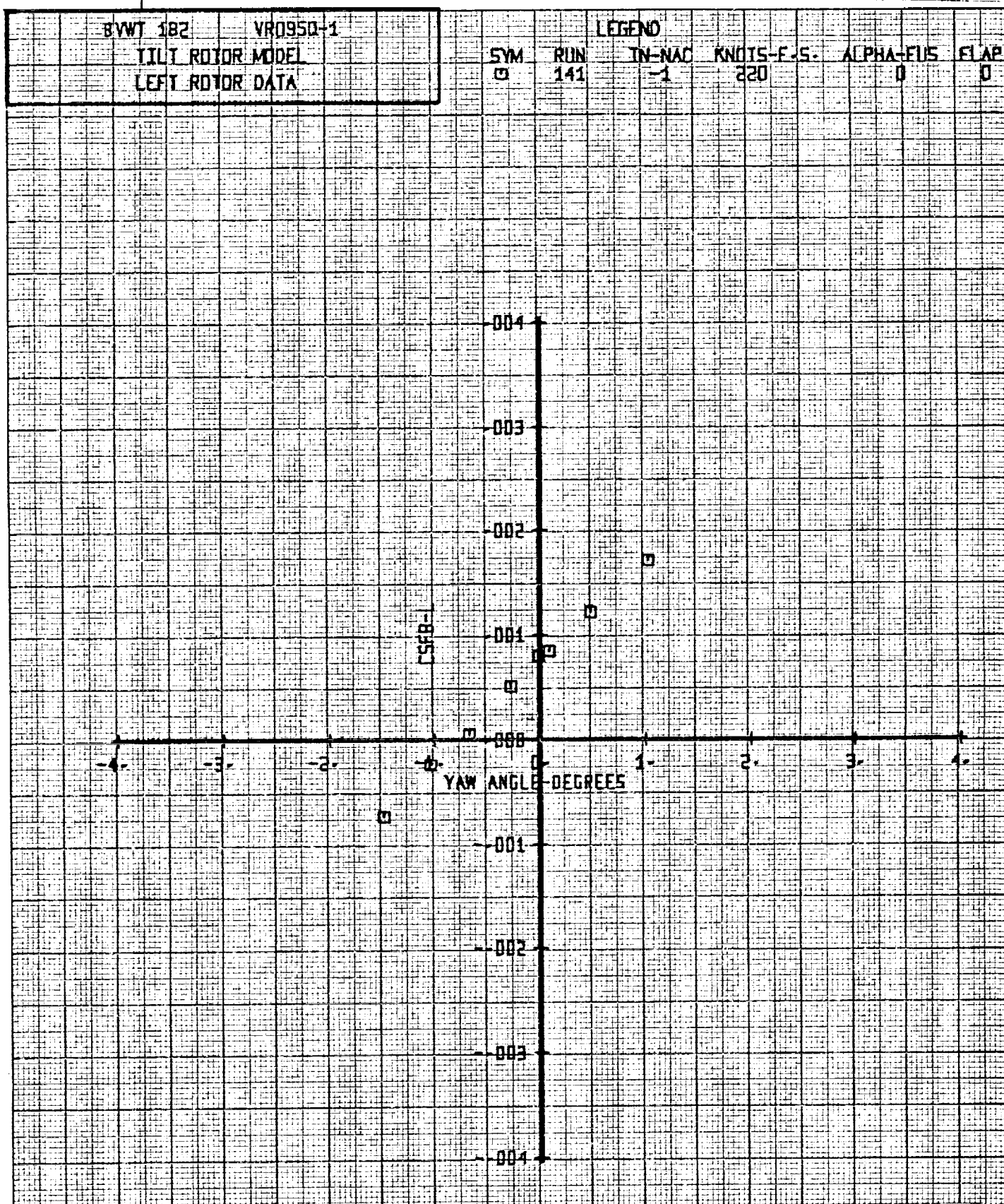


Figure 15-028. Left Rotor Side Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

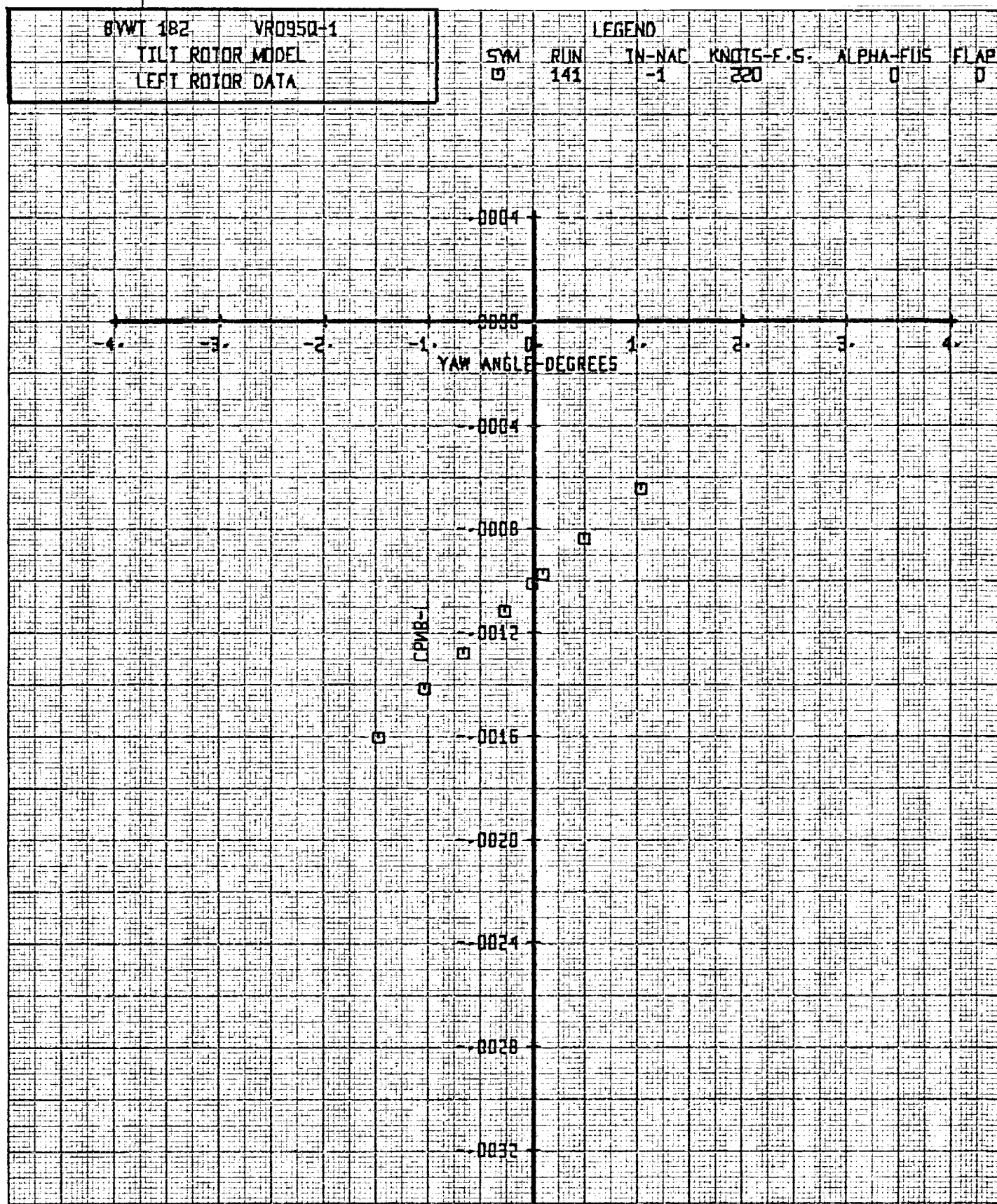


Figure 15-029. Left Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

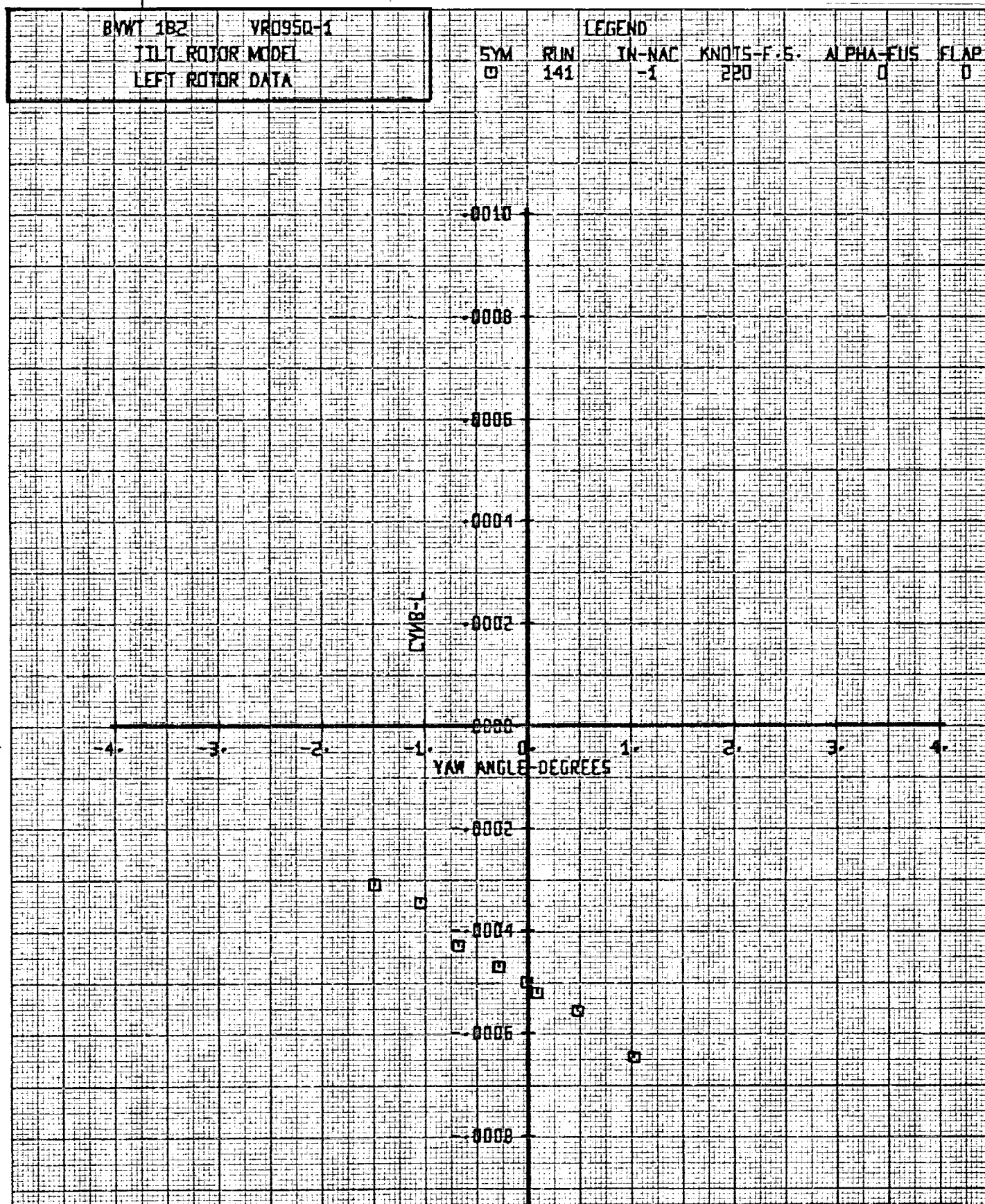
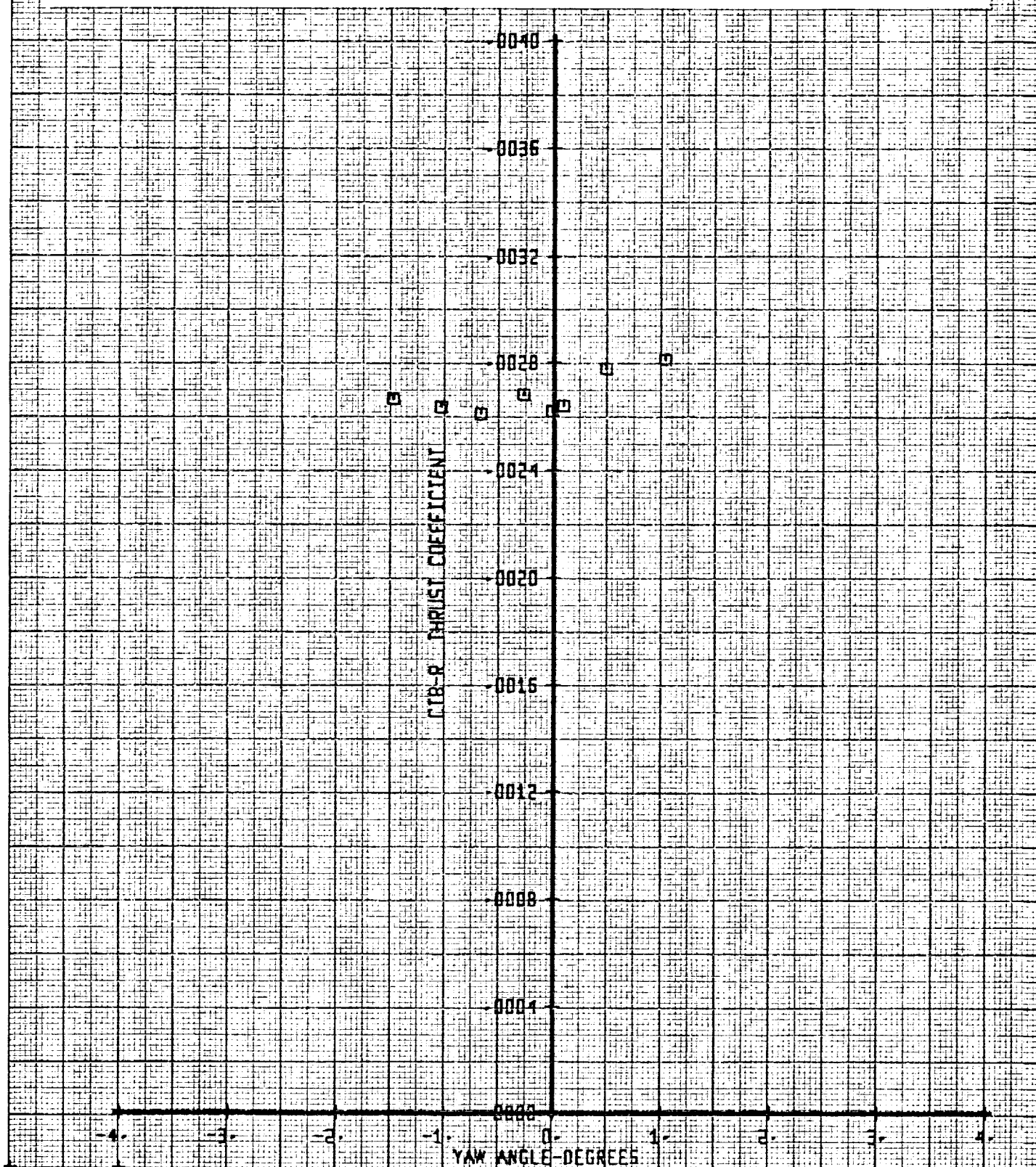


Figure 15-030. Left Rotor Yawing Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BVWT 182 VR0950-1
 TILT ROTOR MODEL
 RIGHT ROTOR DATA

LEGEND
 IN-NAC -1 KNOTS-F.S. 220 ALPHA-FUS 0 FLAP 0
 SYM RUN 141

Figure 15-031. Right Rotor Thrust Coefficient Versus Yaw Angle
 α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BYWT 182 VR0950-1

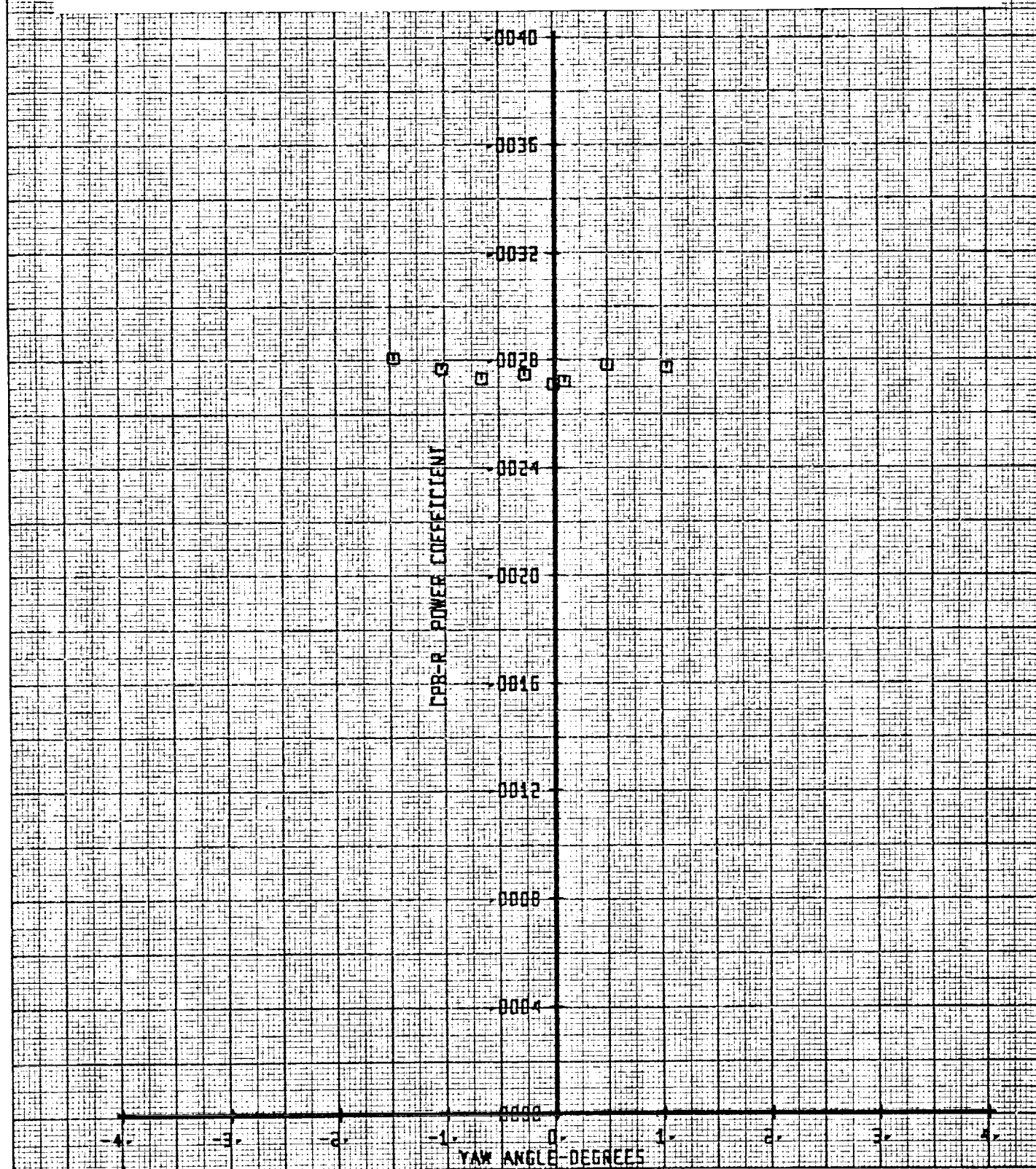
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	141	-1	220	0	0

Figure 15-032. Right Rotor Power Coefficient Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



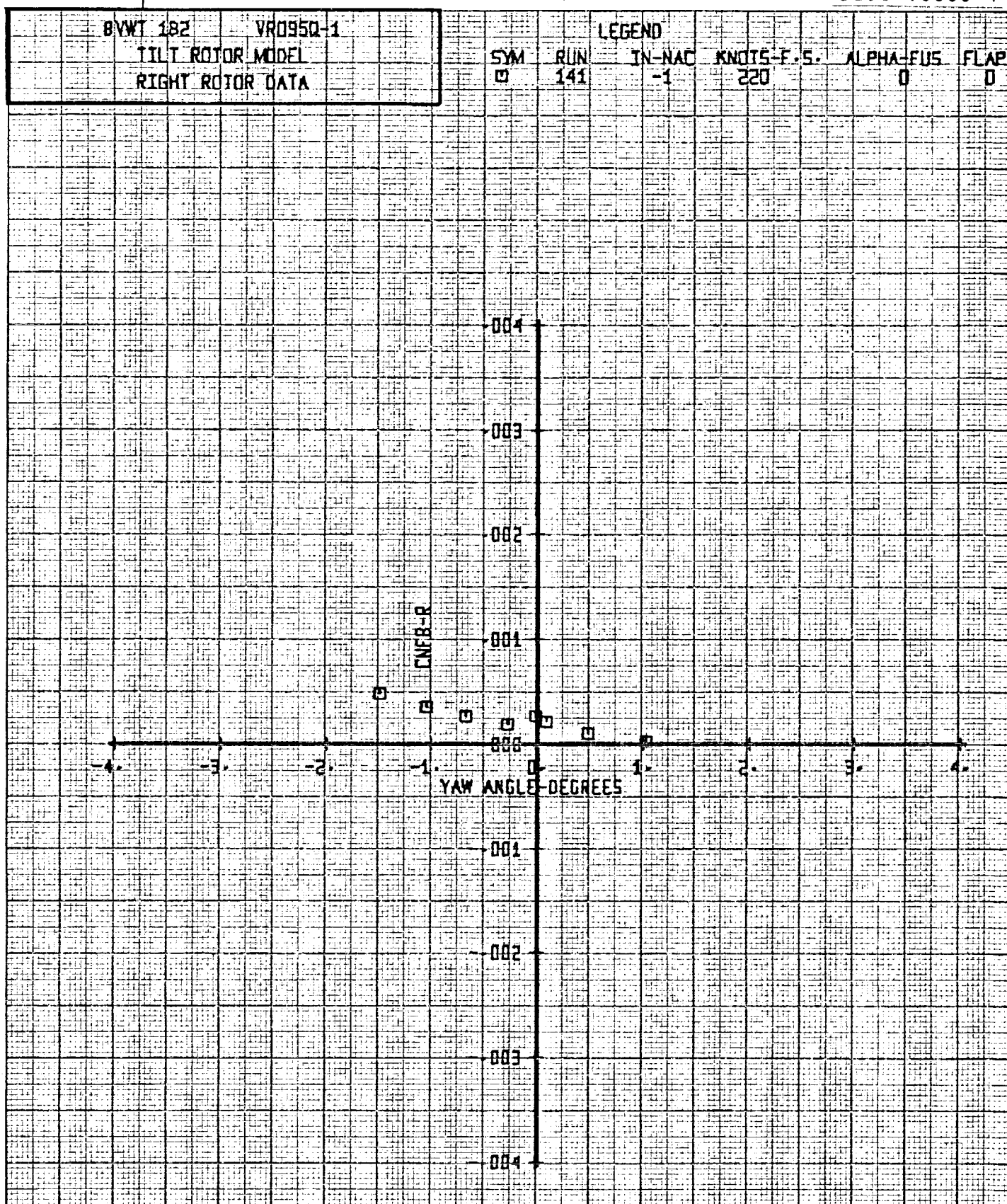
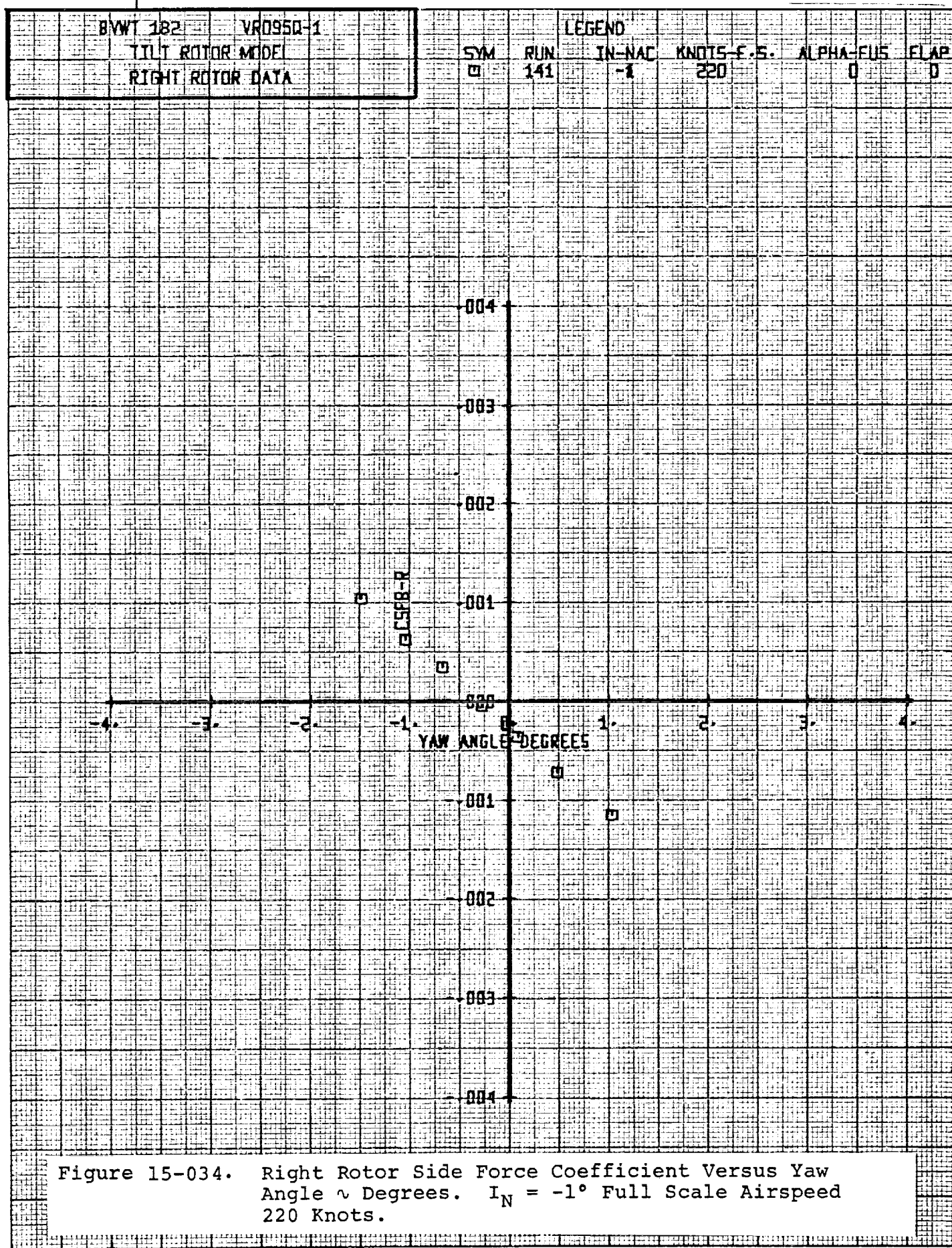


Figure 15-033. Right Rotor Normal Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



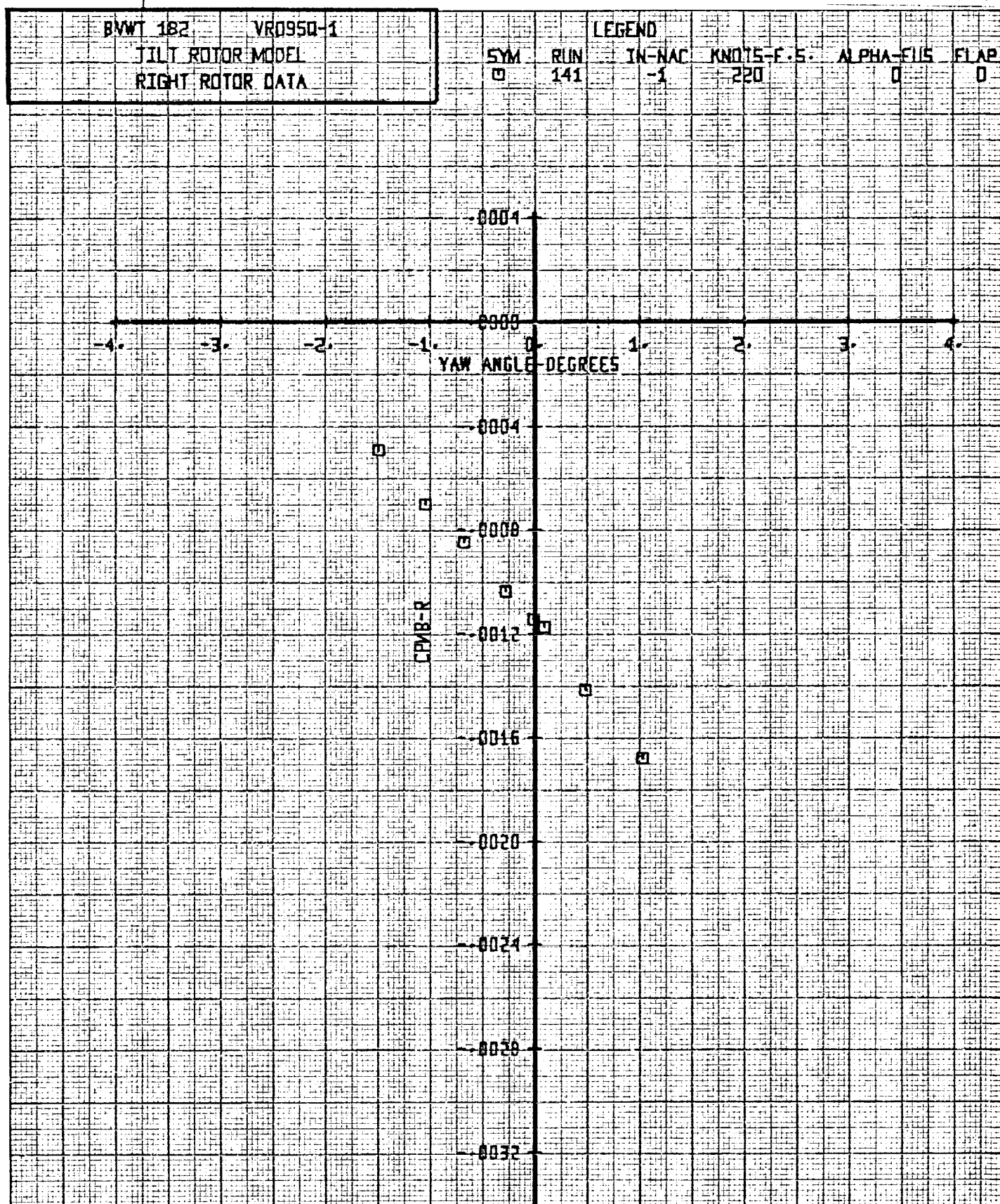


Figure 15-035. Right Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BVWT 182 VR0950-1
 TILT ROTOR MODEL
 RIGHT ROTOR DATA

LEGEND
 SYM RUN IN-MAC KNOTS-F.S. ALPHA-FUS FLAP
 □ 141 -1 220 0 0

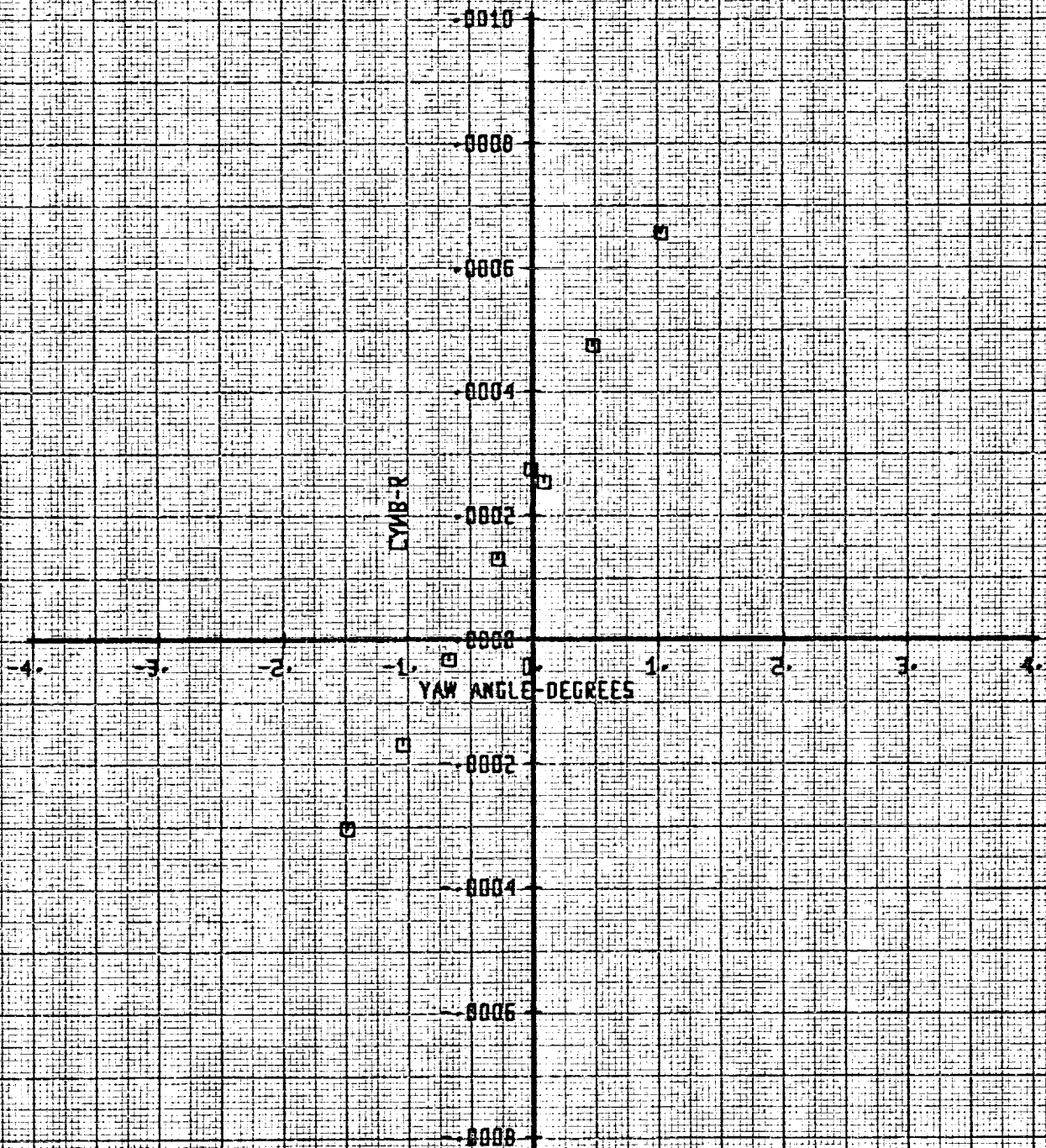
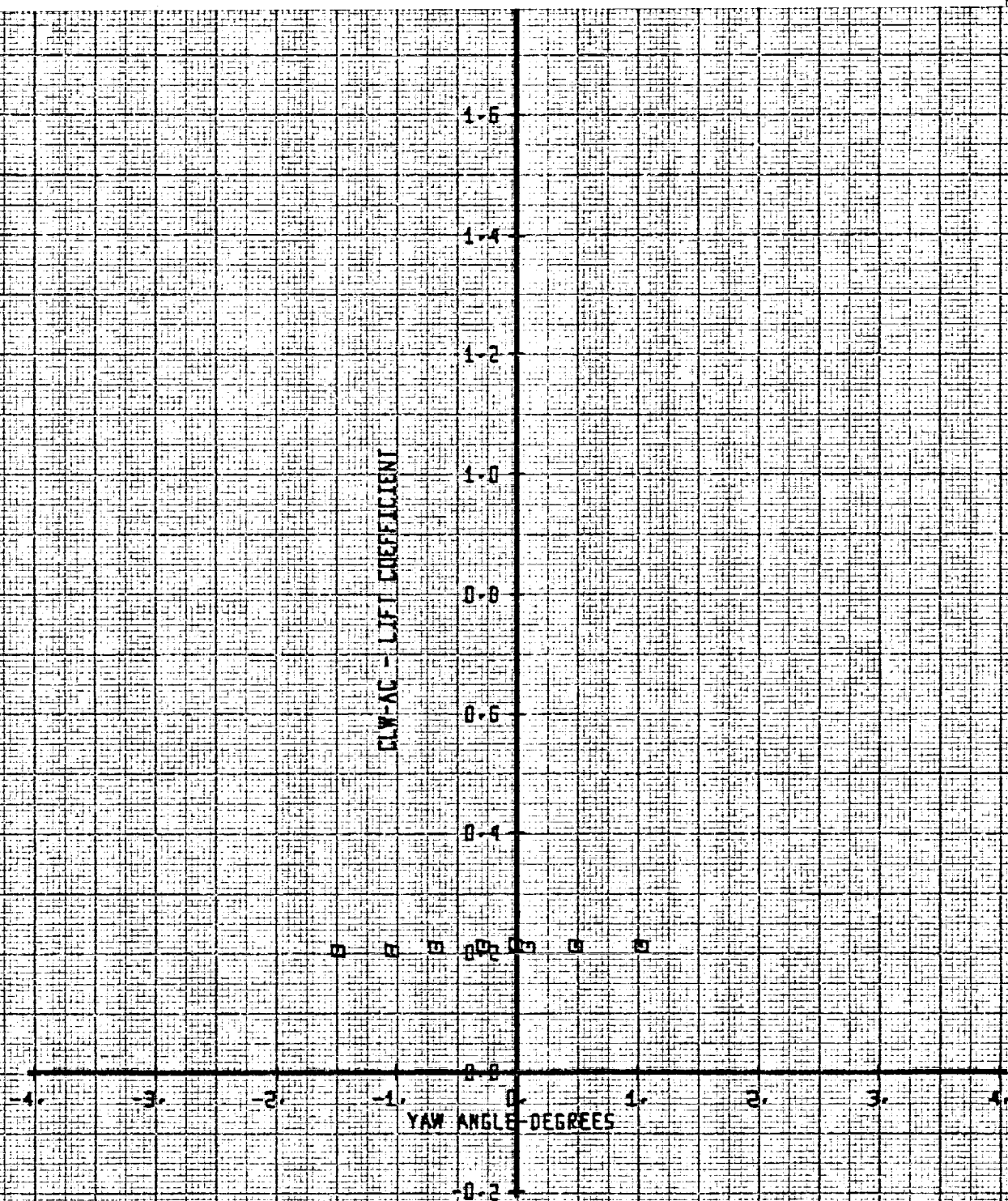


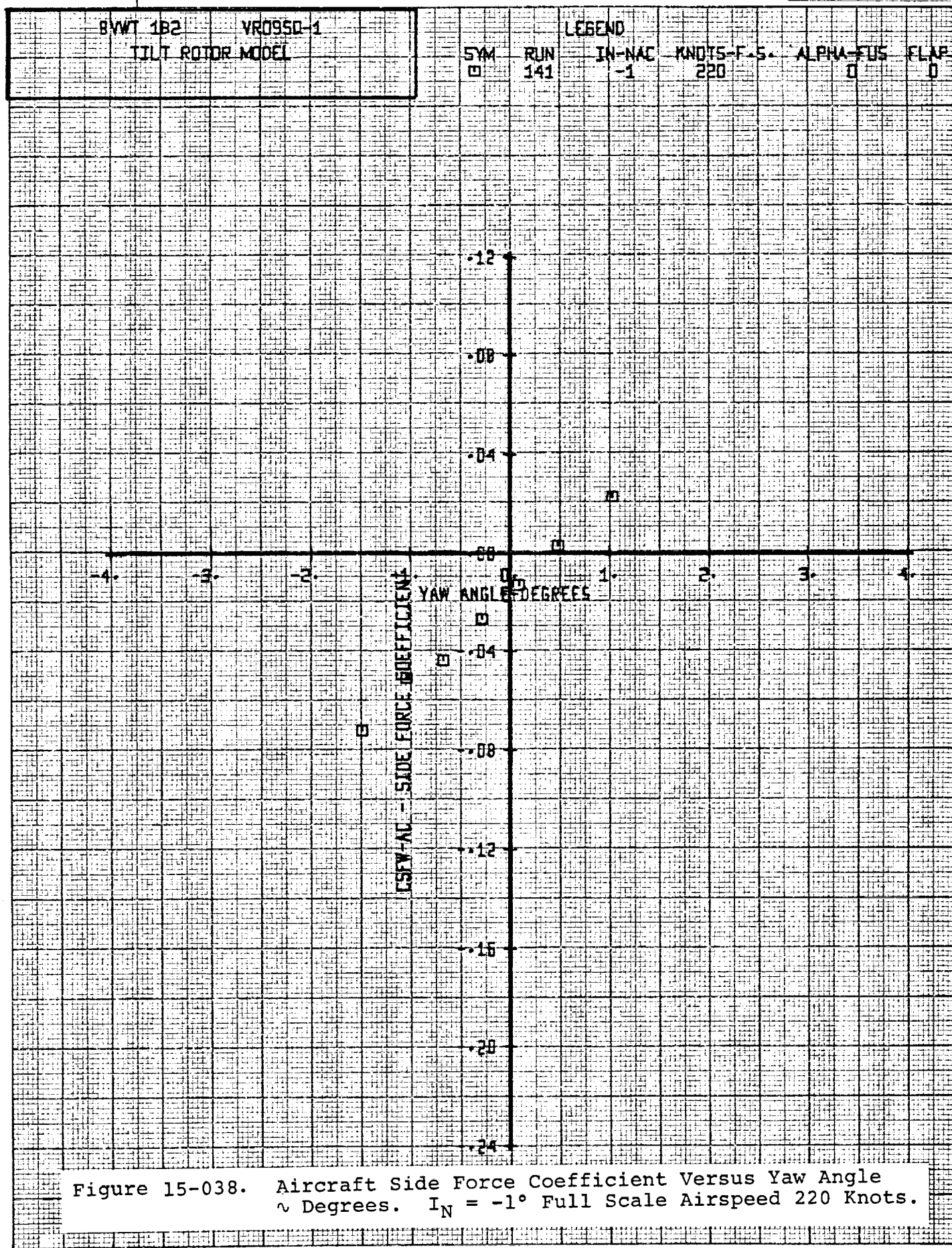
Figure 15-036. Right Rotor Yawing Moment Versus Yaw Angle ~
 Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BNWT 182 VR0950-1
TILT ROTOR MODEL

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 141 -1 220 0 0

Figure 15-037. Aircraft Lift Coefficient Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.





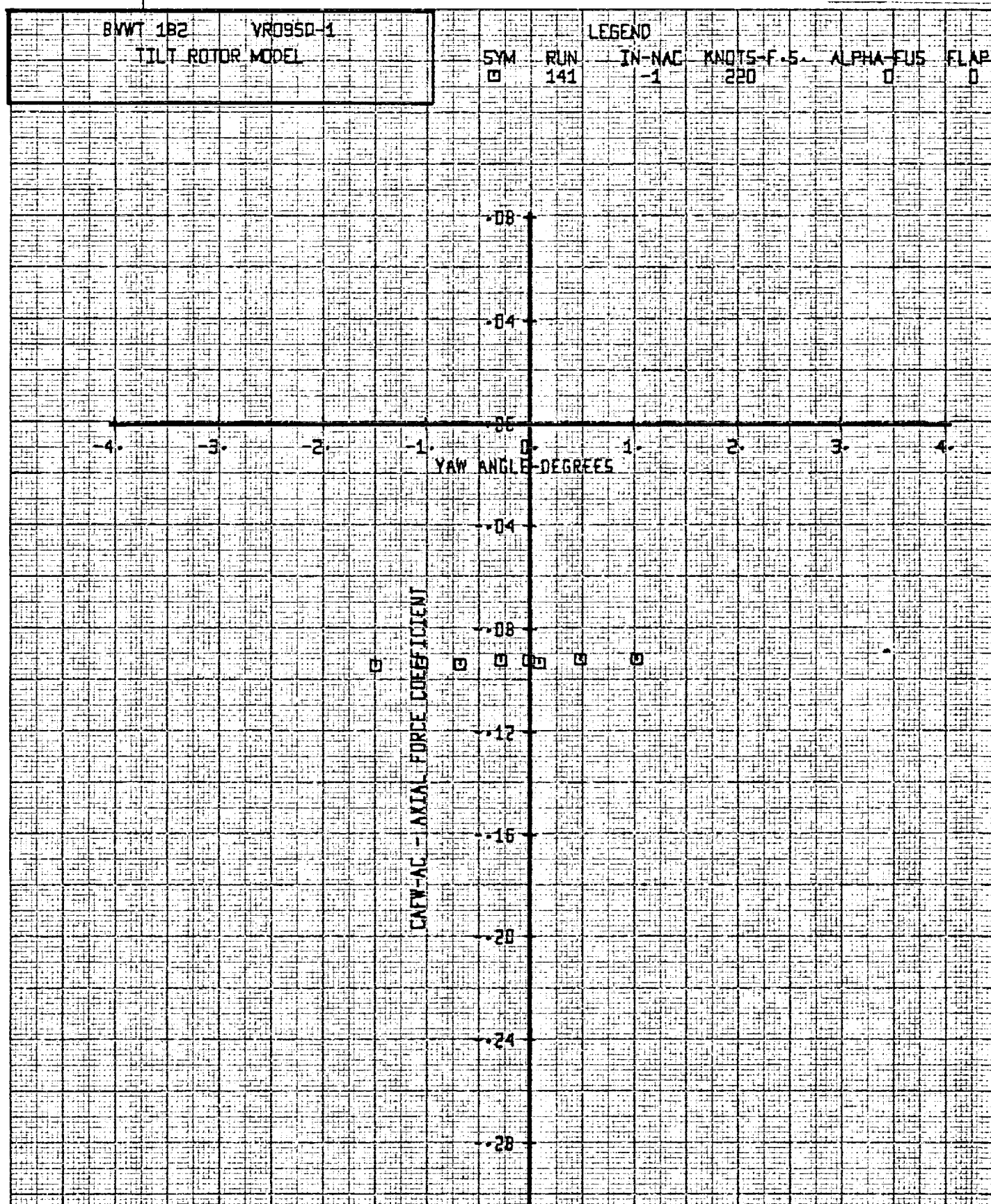


Figure 15-039. Aircraft Axial Force Coefficient Versus Yaw Angle
 \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BVWT 182 VR0950-1
TILT ROTOR MODEL

LEGEND

SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 141 -1 220 0 0

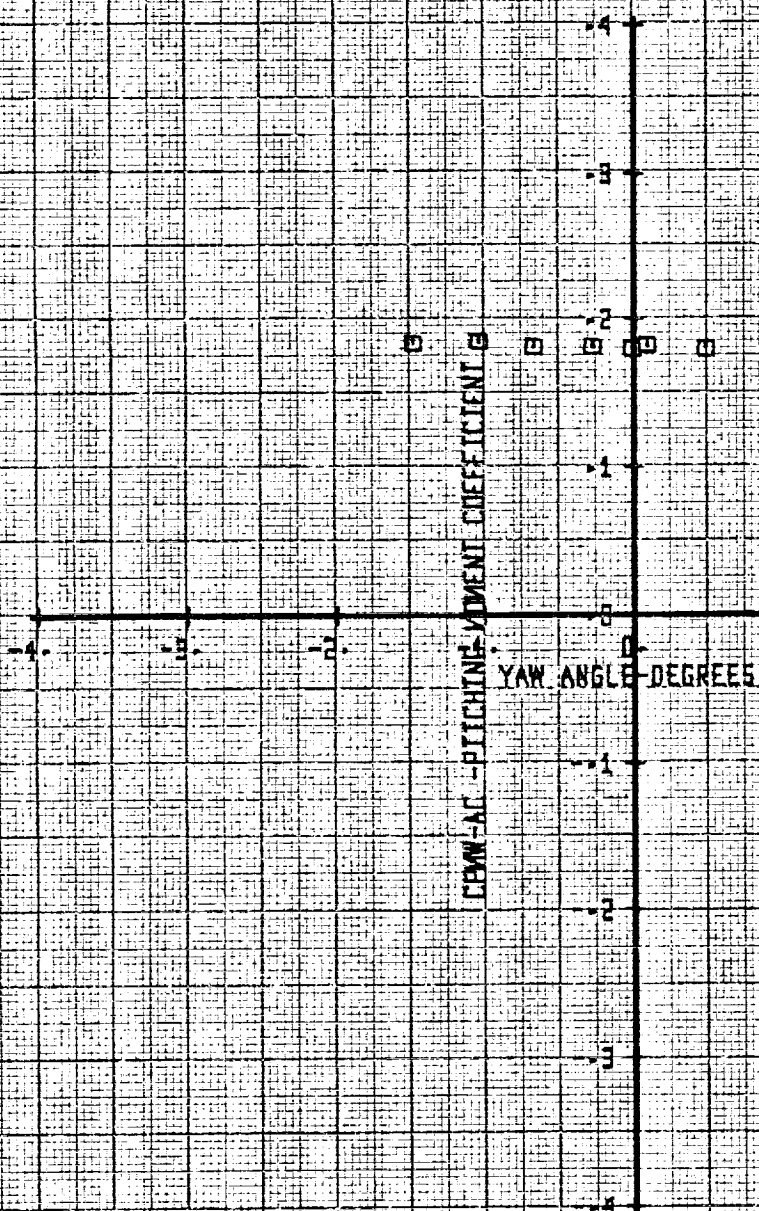


Figure 15-040. Aircraft Pitching Moment Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

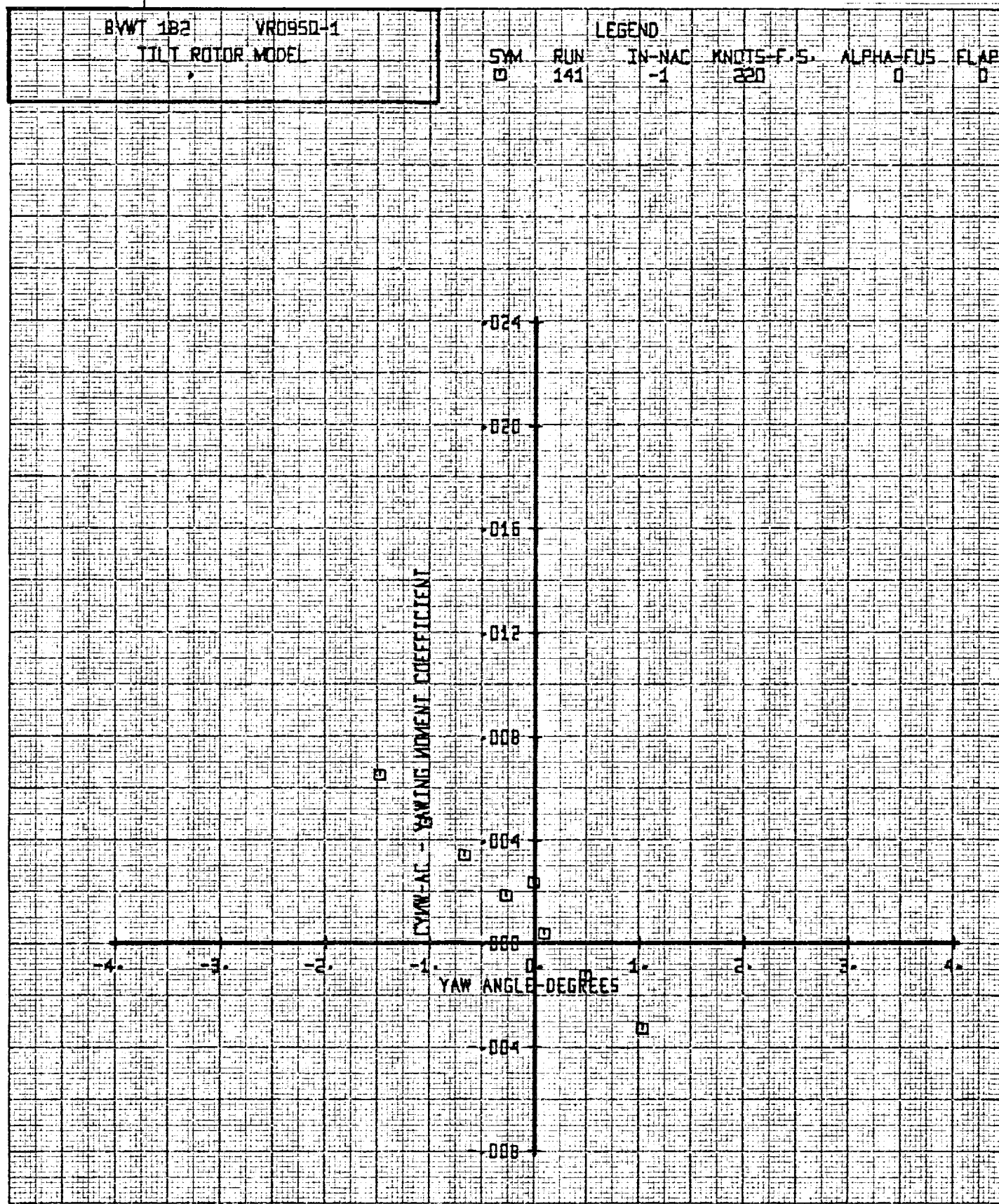


Figure 15-041. Aircraft Yawing Moment Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

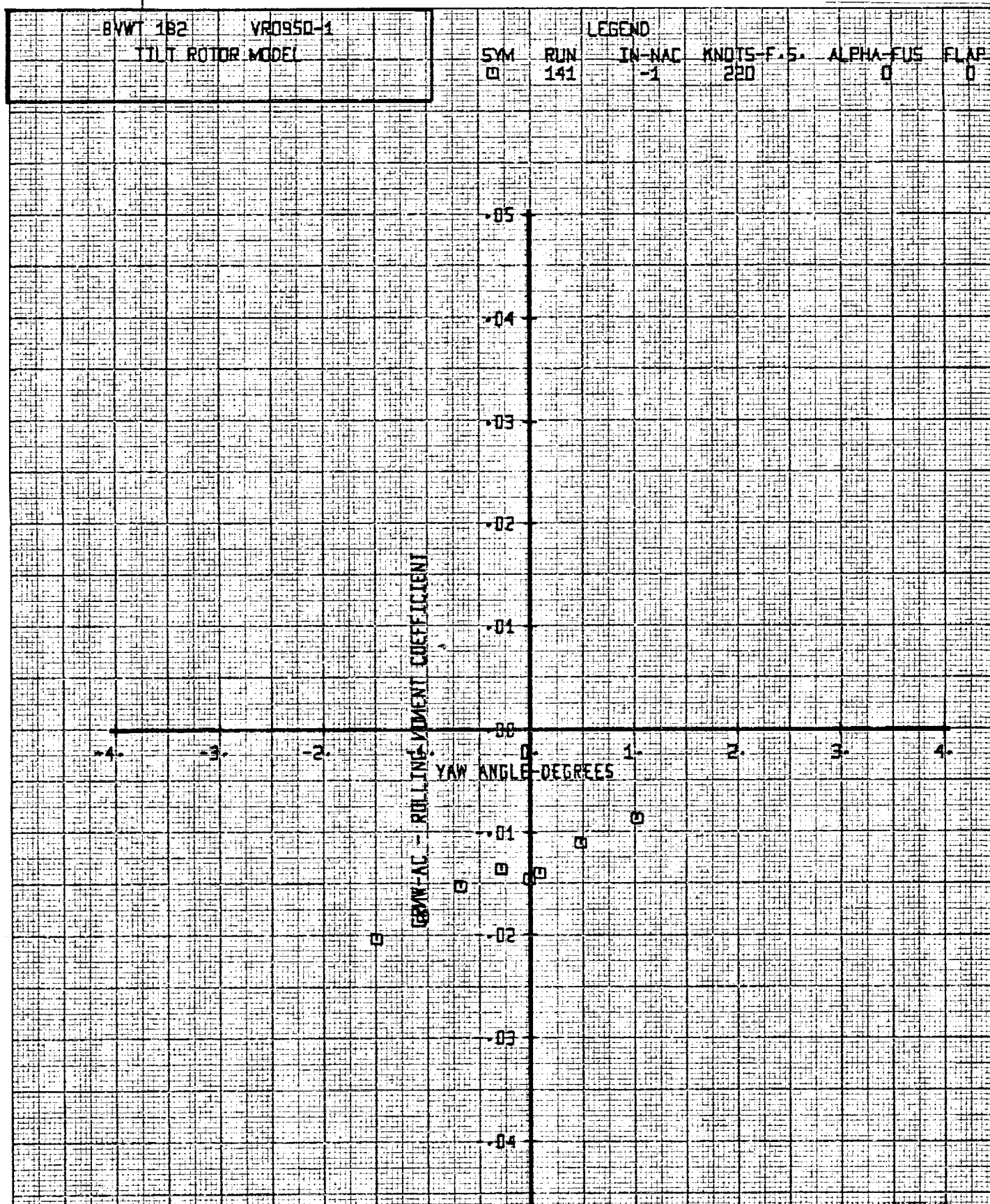
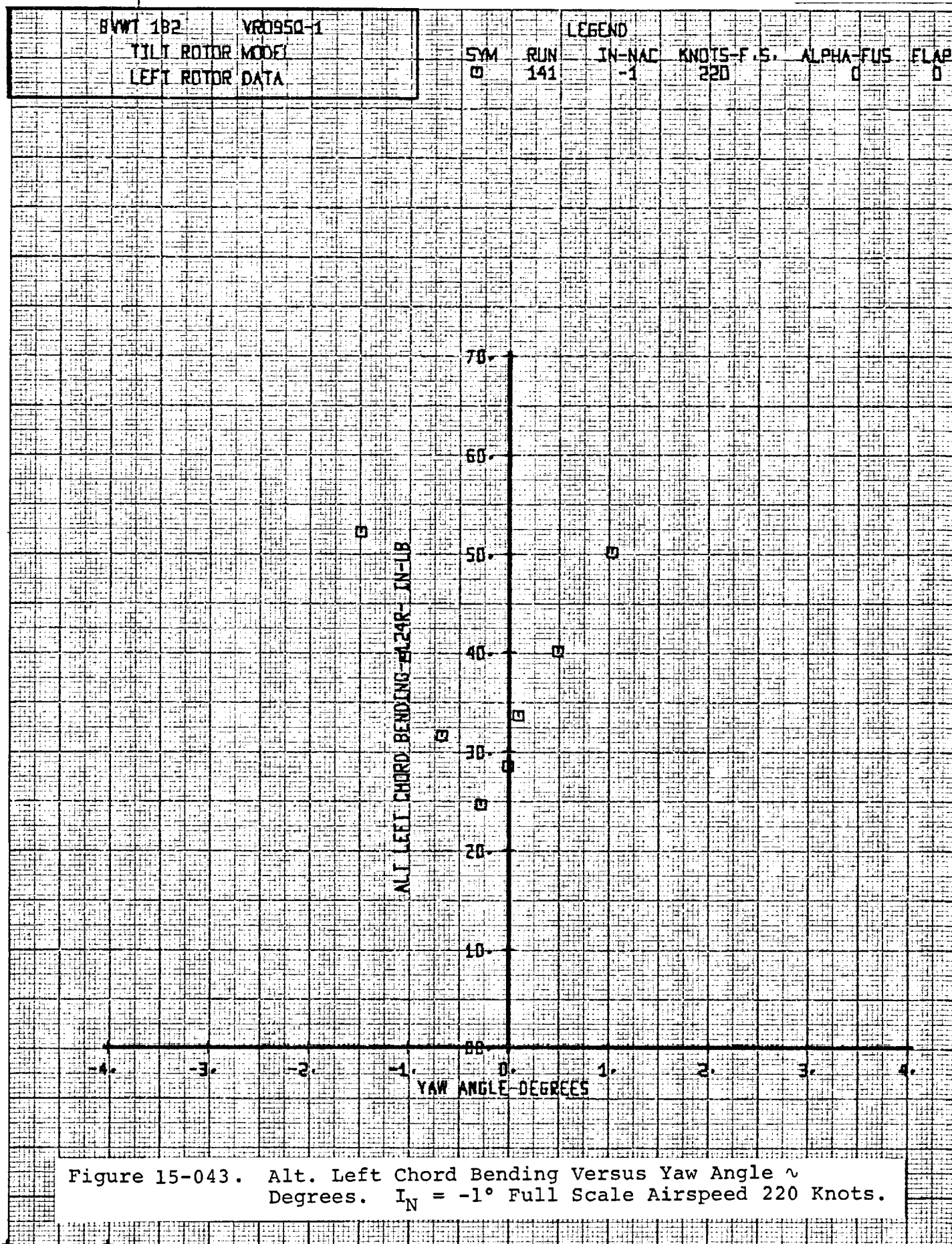


Figure 15-042. Aircraft Rolling Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BWV 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

SYM

LEGEND

RUN
141

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

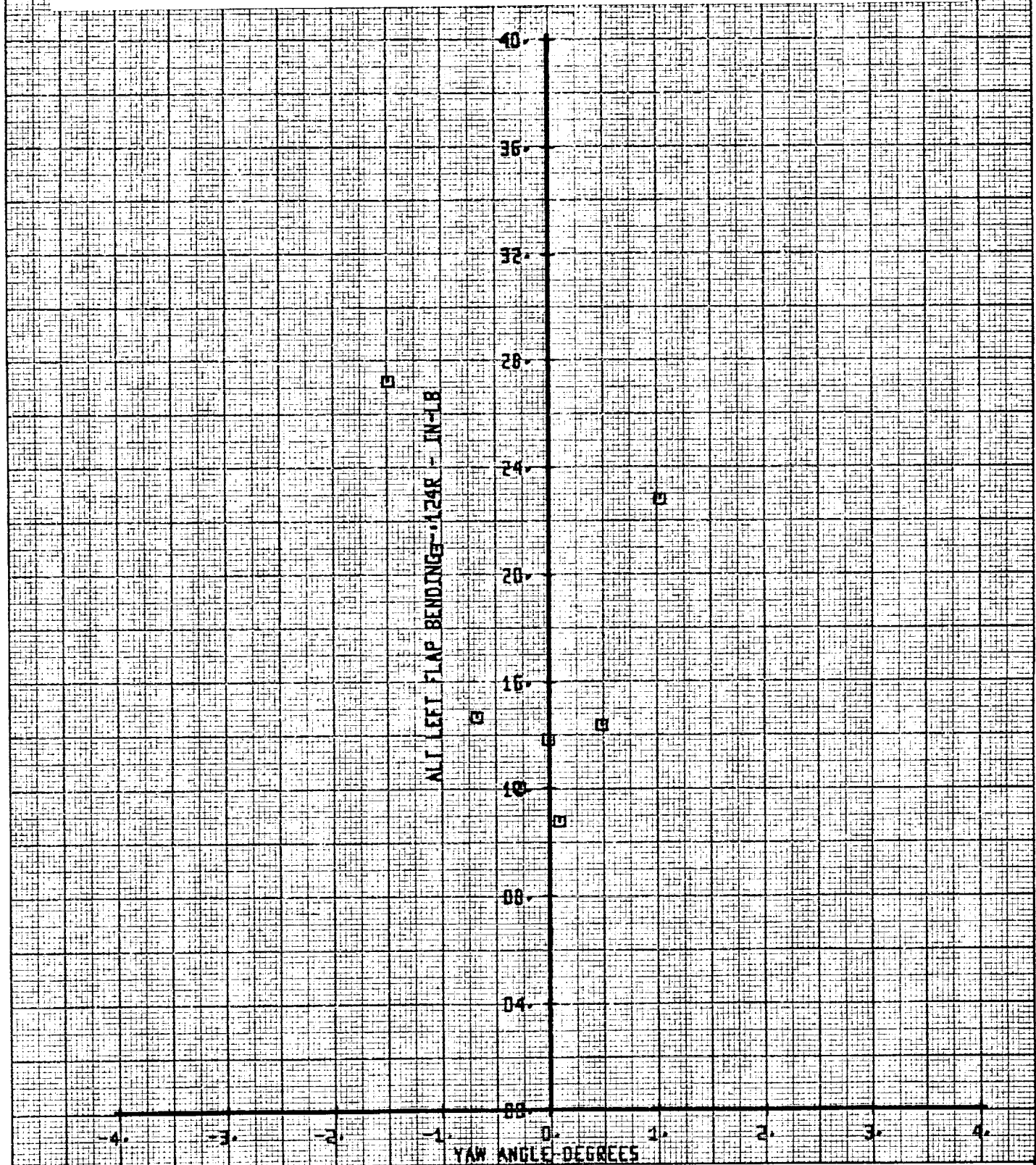
-1

220

0

0

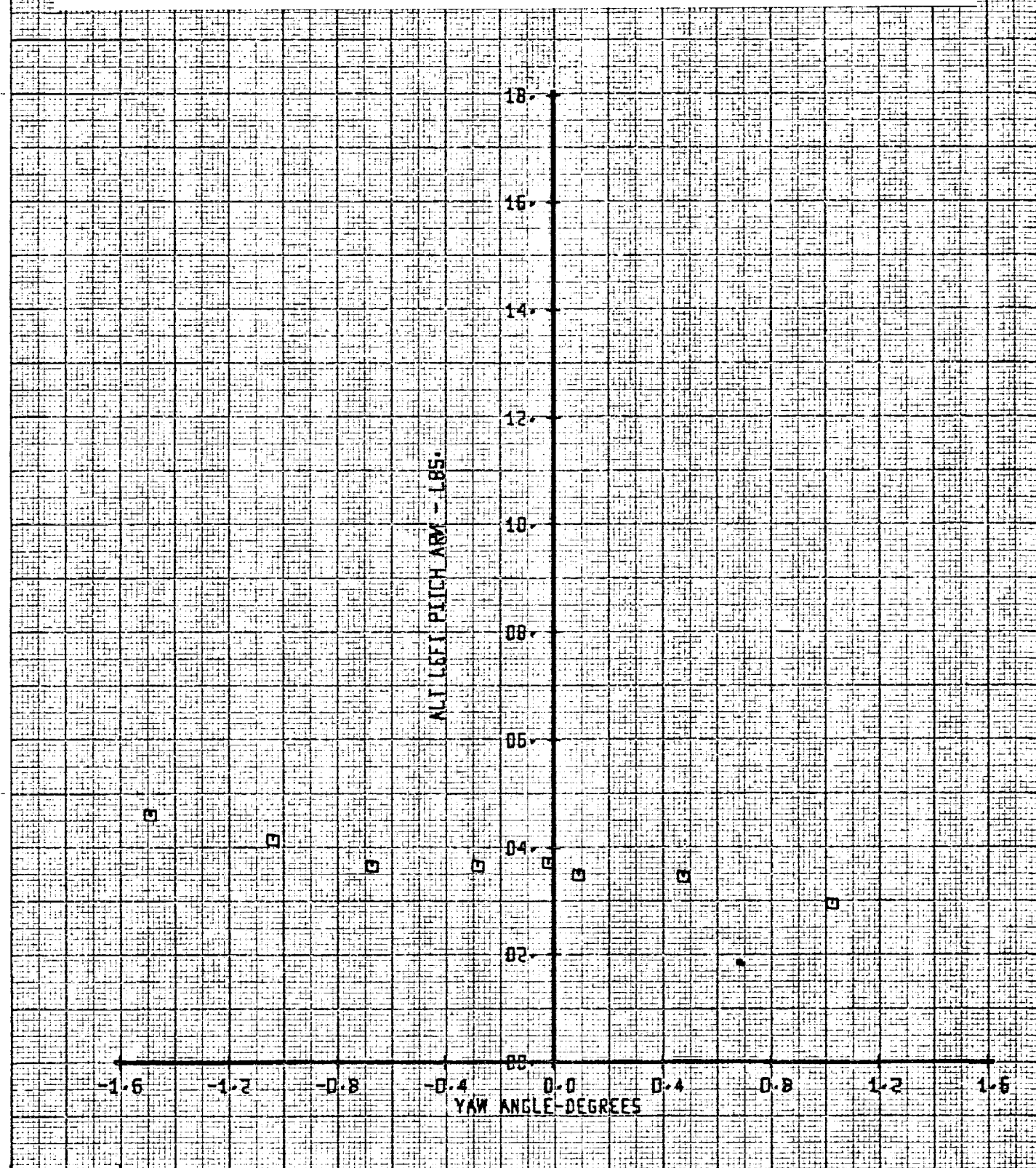
Figure 15-044. Alt. Left Flap Bending Versus Yaw Angle α
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

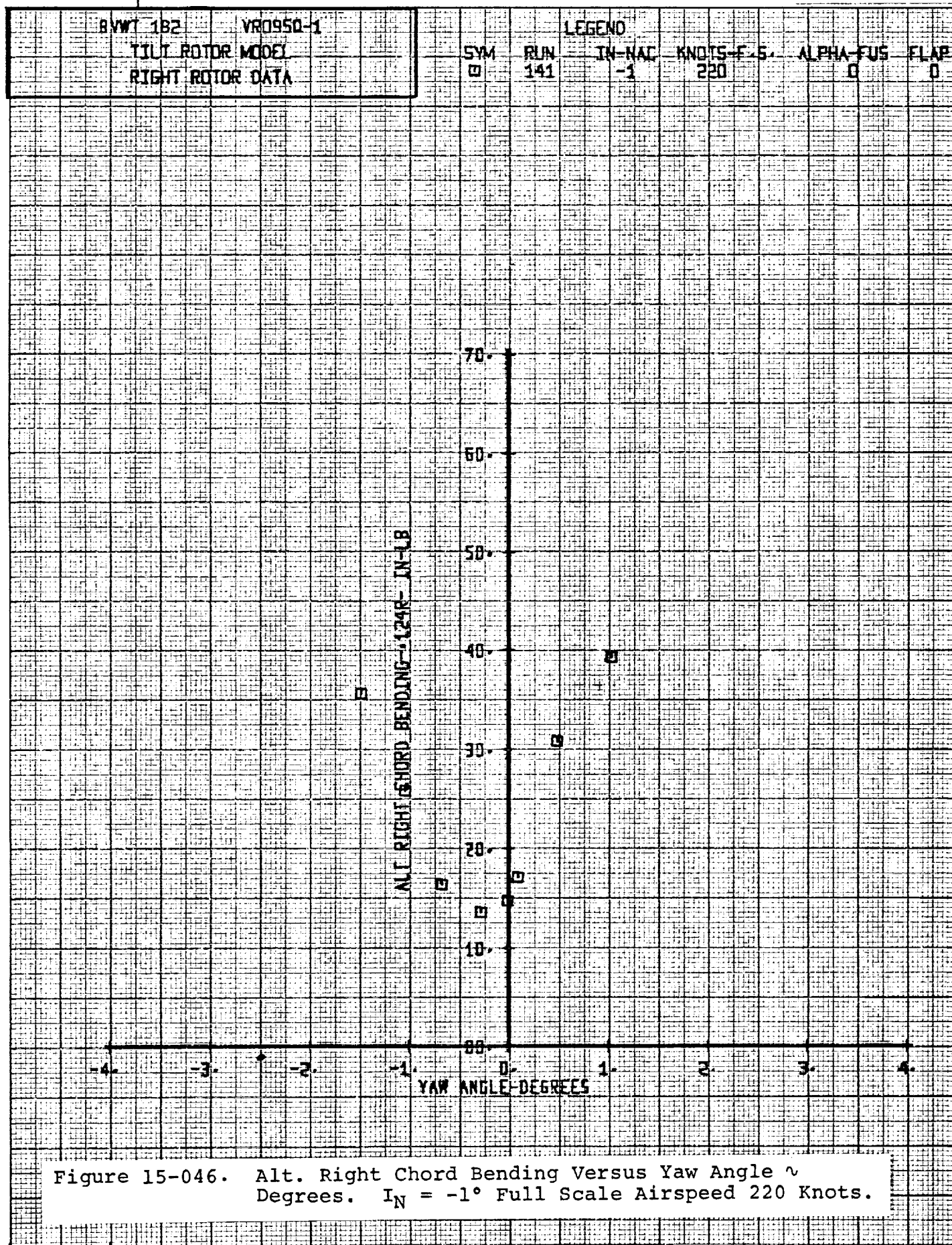


BVWT 182 VR0950-1
TILT ROTOR MODEL
LEFT ROTOR DATA

LEGEND
SYM RUN IN-MAC KNOTS-F.S. ALPHA-FUS FLAP
□ 141 -1 220 0 0

Figure 15-045. Alt. Left Pitch Link Load Versus Yaw Angle ψ
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

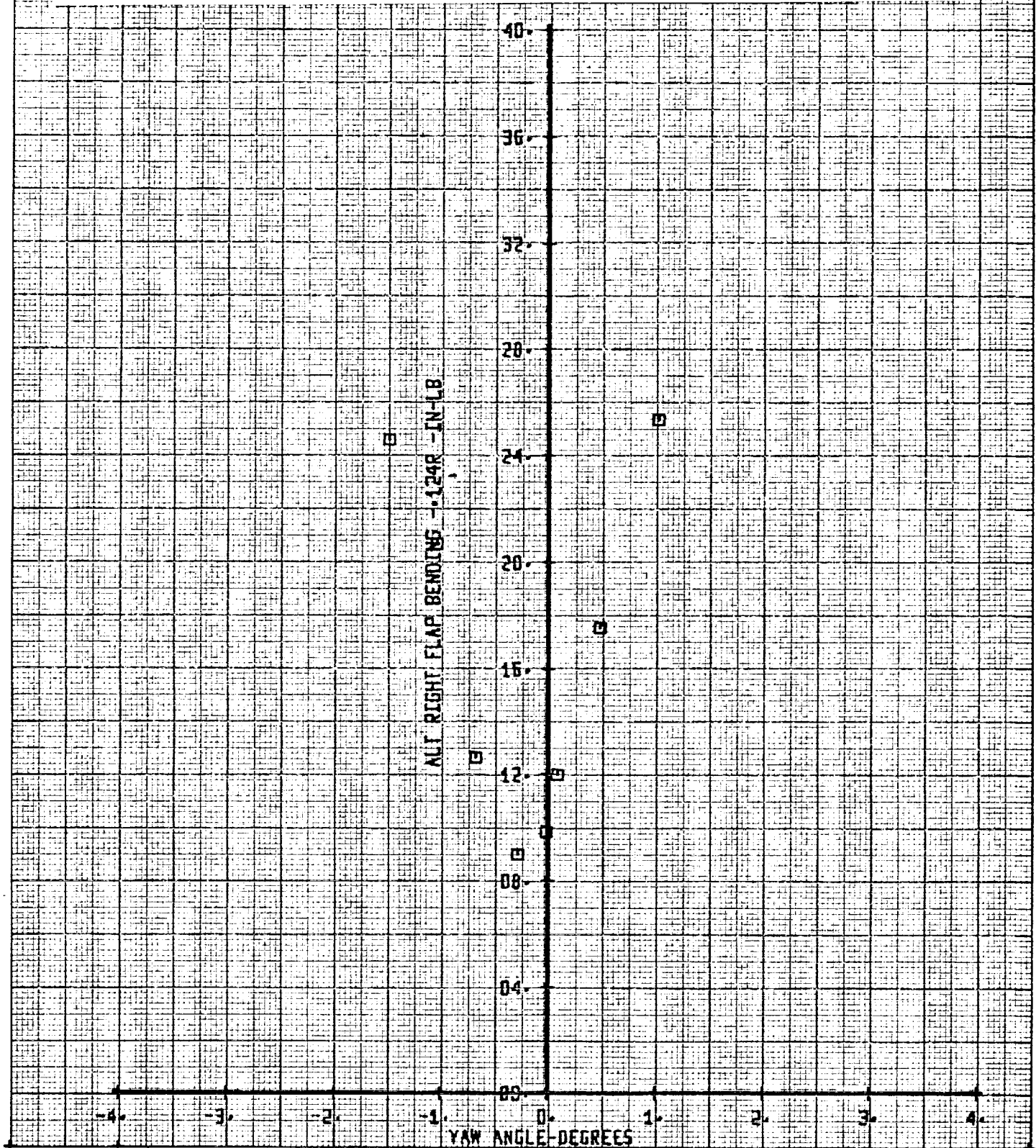




BVWT 182 VR0950-1
 TILT ROTOR MODEL
 RIGHT ROTOR DATA

LEGEND
 SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
 □ 141 -1 220 0 0

Figure 15-047. Alt. Right Flap Bending Versus Yaw Angle ~
 Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



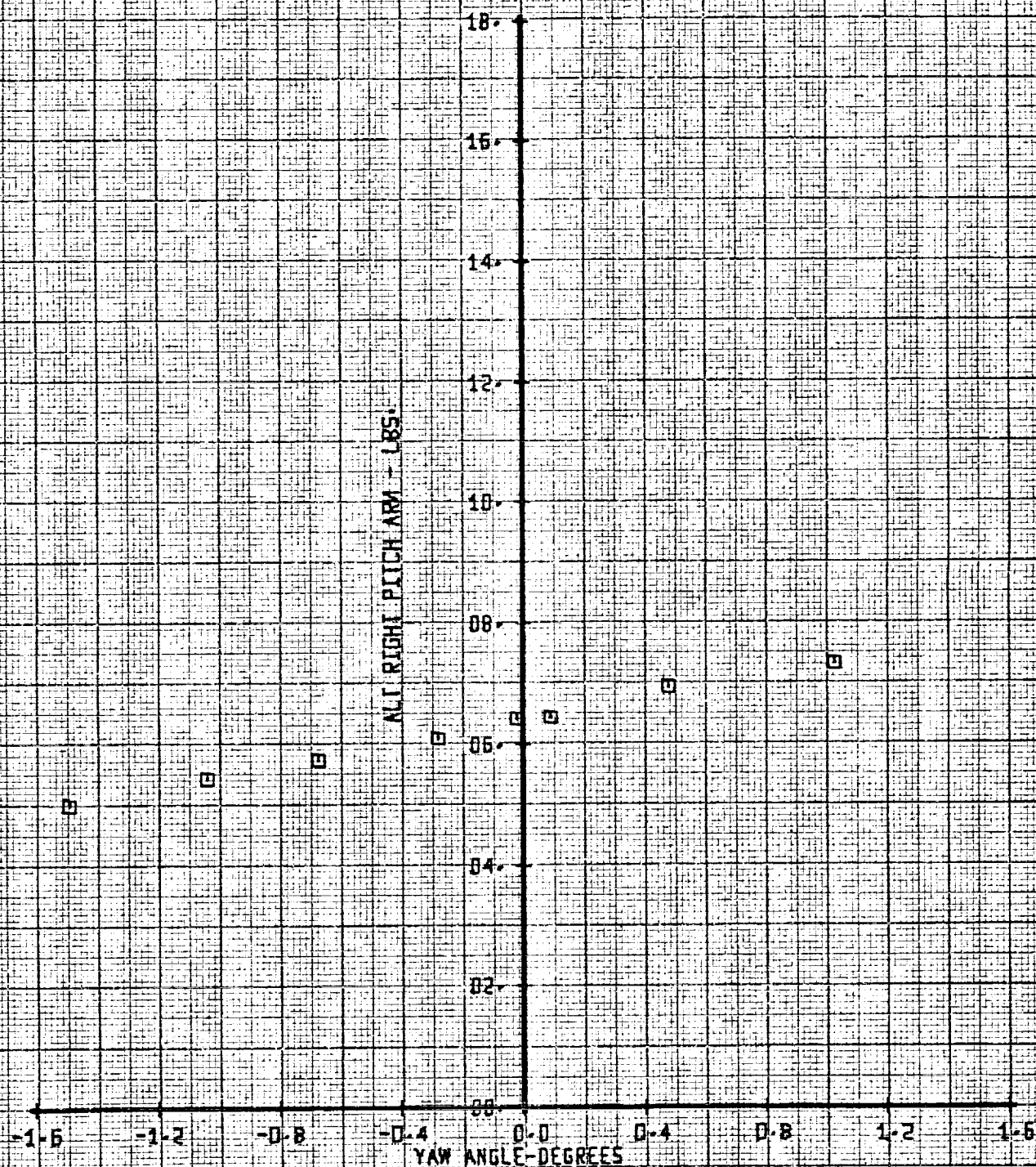
245

SET 93
 BVWT 182

BVWT 182 VRO950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 141 -1 220 0 0

Figure 15-048. Alt. Right Pitch Link Load Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BVWT	182	VR0950-1
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TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

ELIN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

3

143

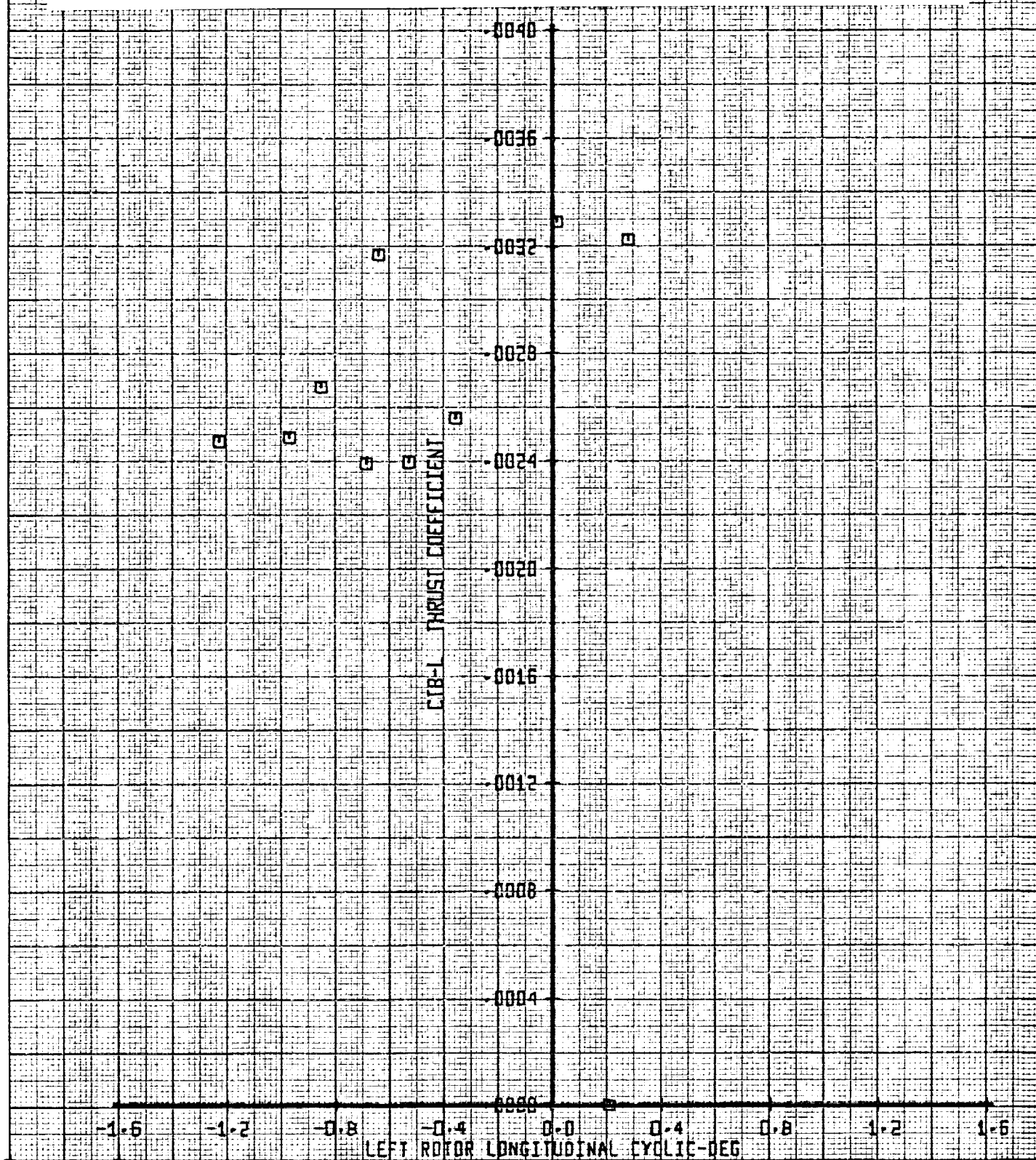
-1

220

U

100

Figure 15-049. Left Rotor Thrust Coefficient Versus Left Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BNWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

143

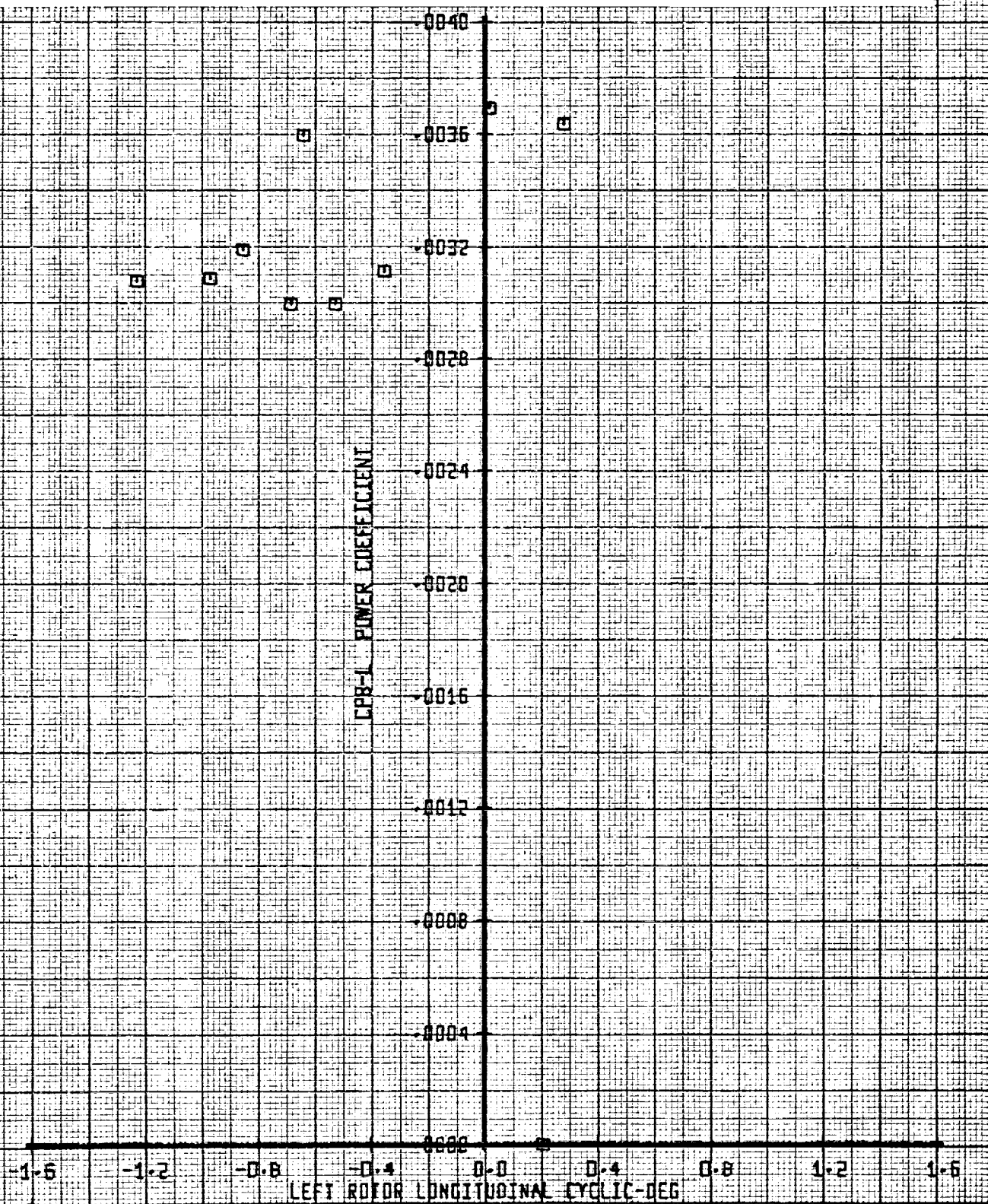
-1

220

0

0

Figure 15-050. Left Rotor Power Coefficient Versus Left Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 220 Knots.



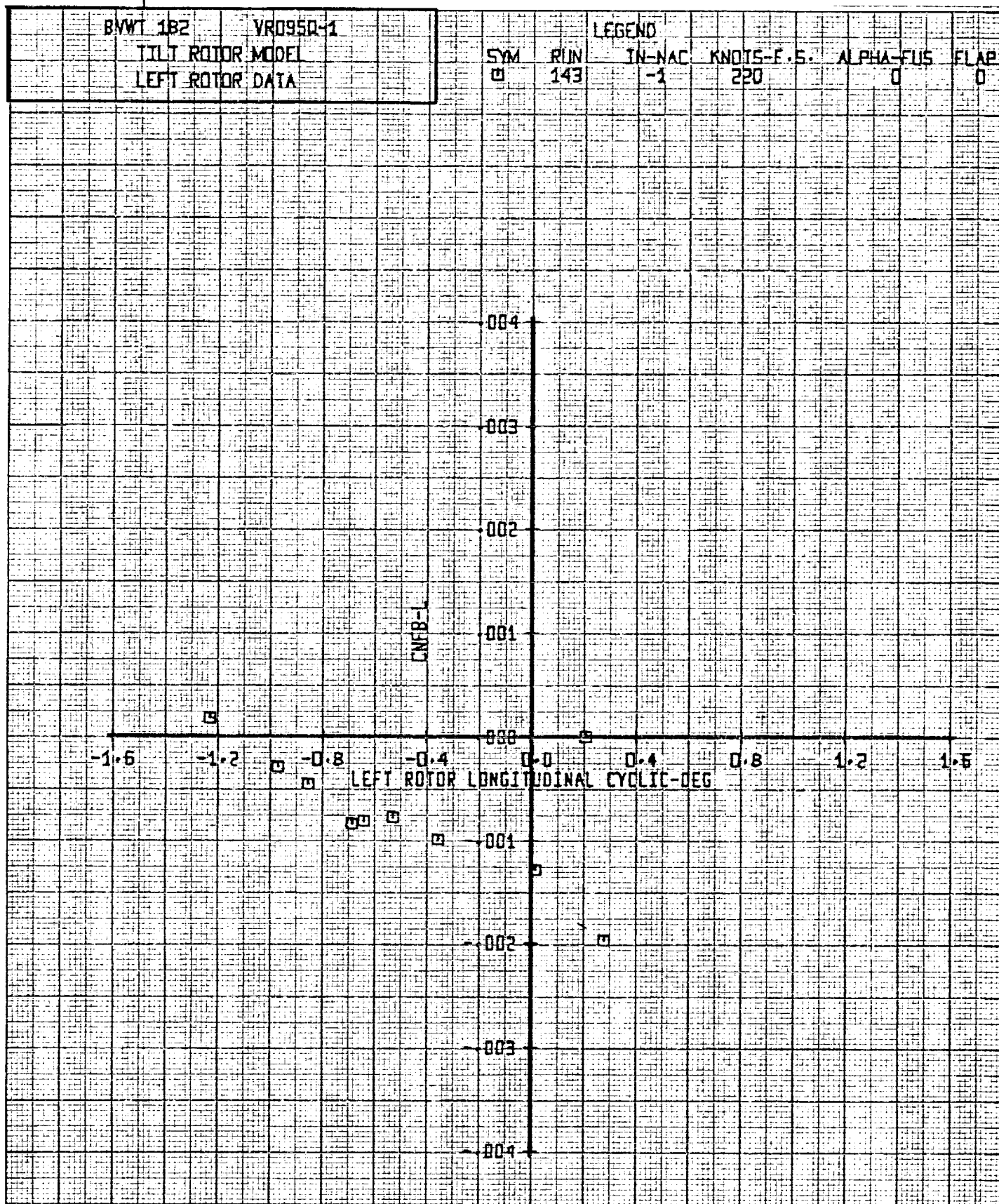


Figure 15-051. Left Rotor Normal Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

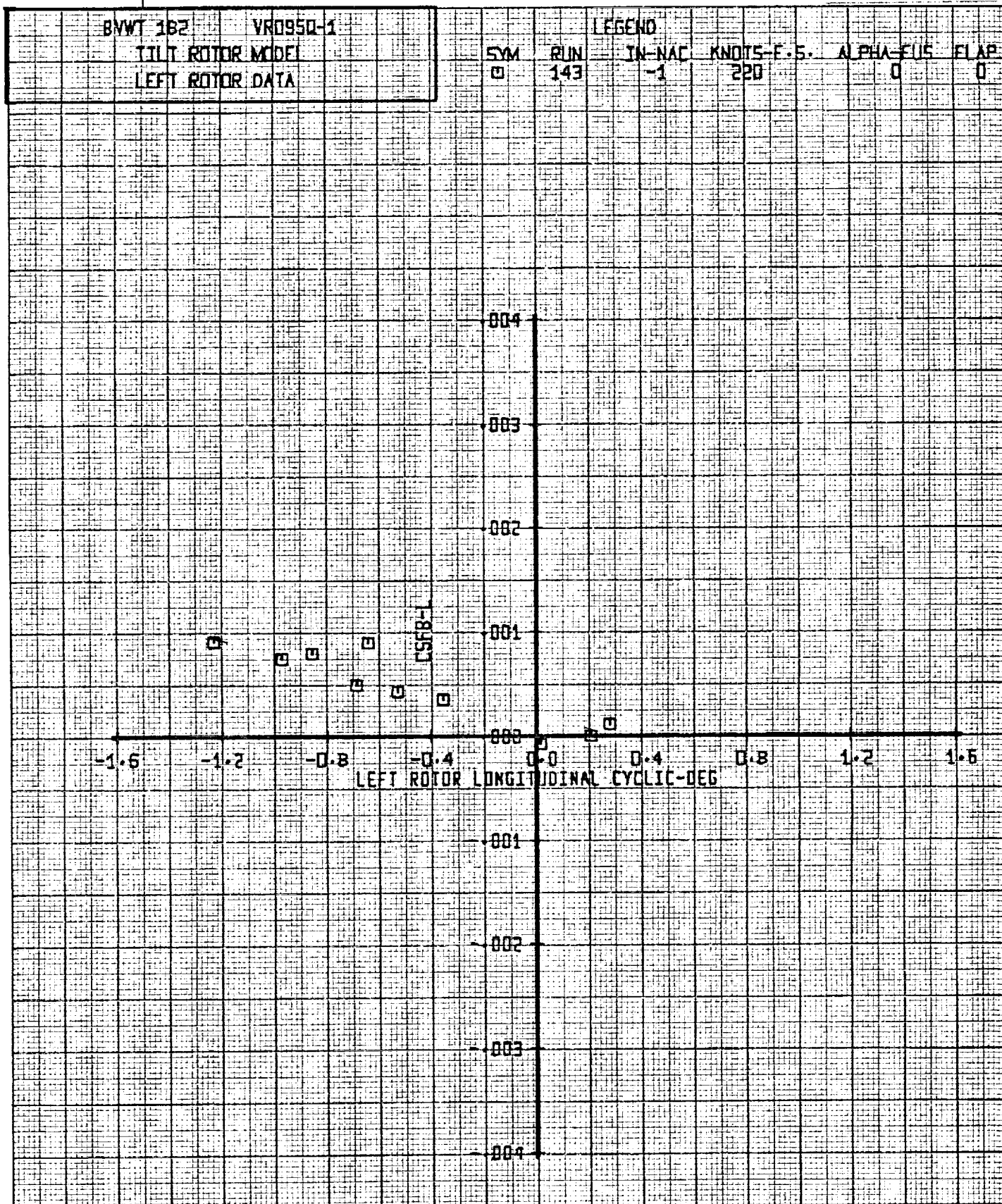


Figure 15-052. Left Rotor Side Force Coefficient Versus Left Rotor Long. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

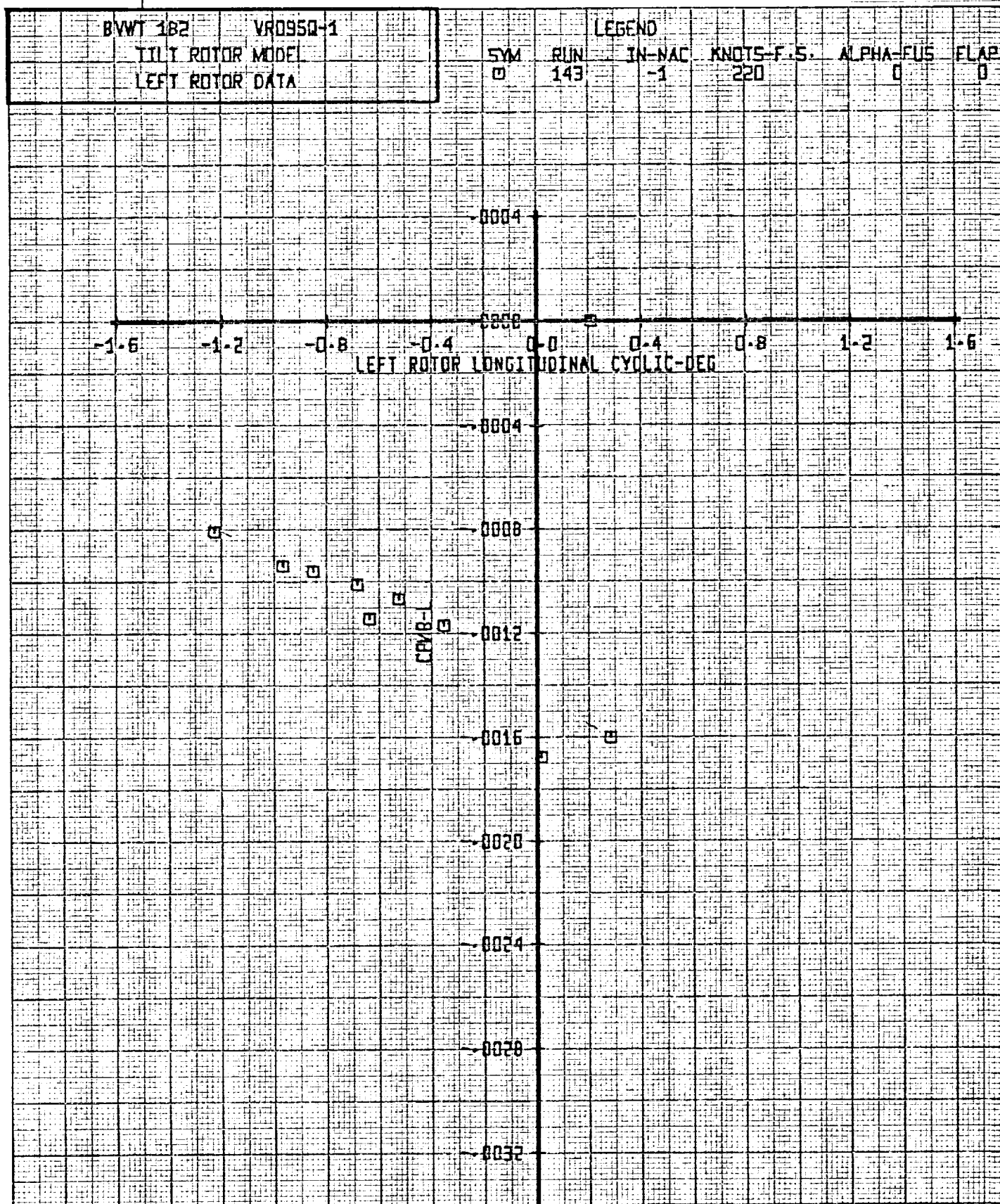


Figure 15-053. Left Rotor Pitching Moment Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

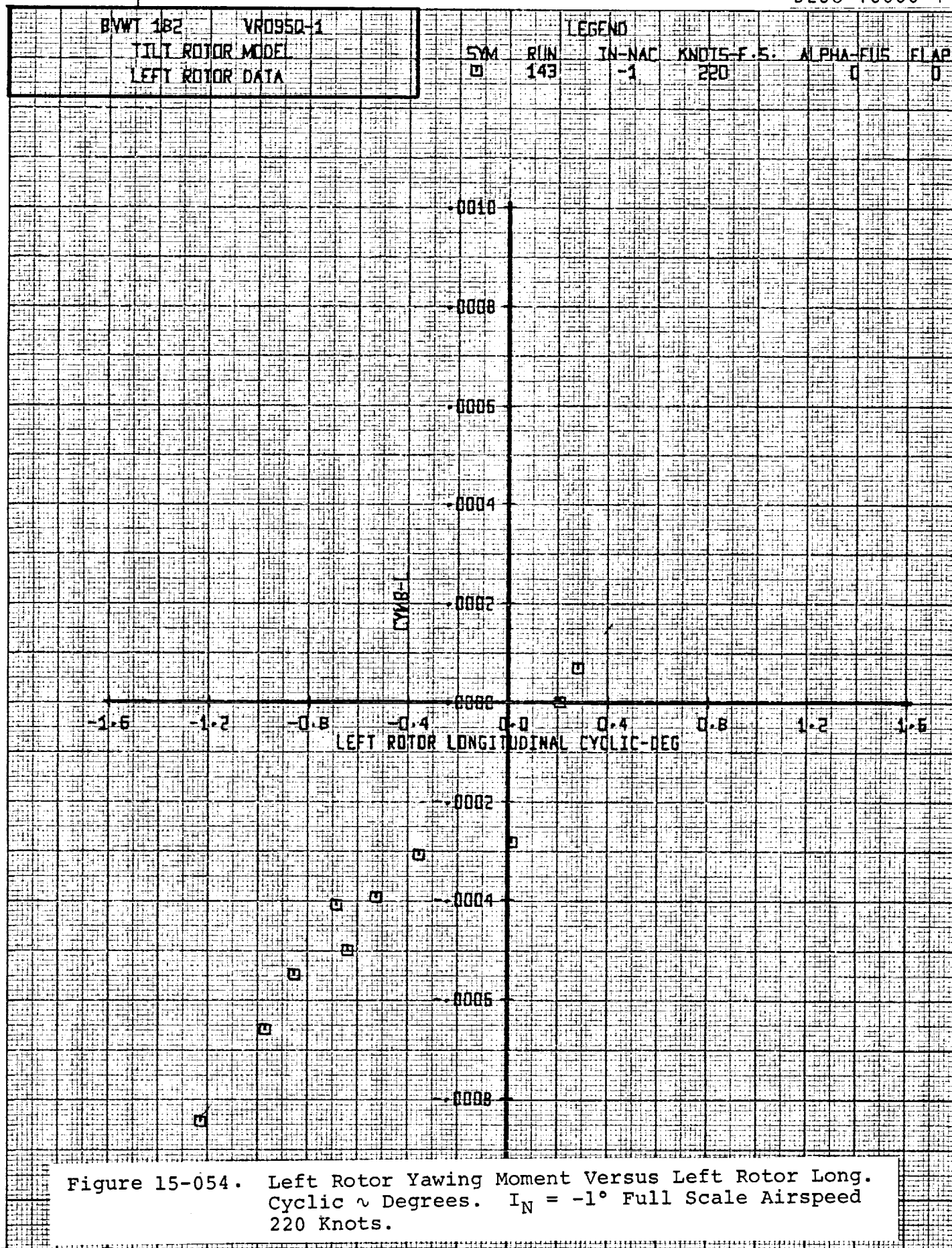


Figure 15-054. Left Rotor Yawing Moment Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BVWT 182 VRO950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

R/N

IN-NAC

KNOTS-F.F.

ALPHA-FUS

FLAP

□

143

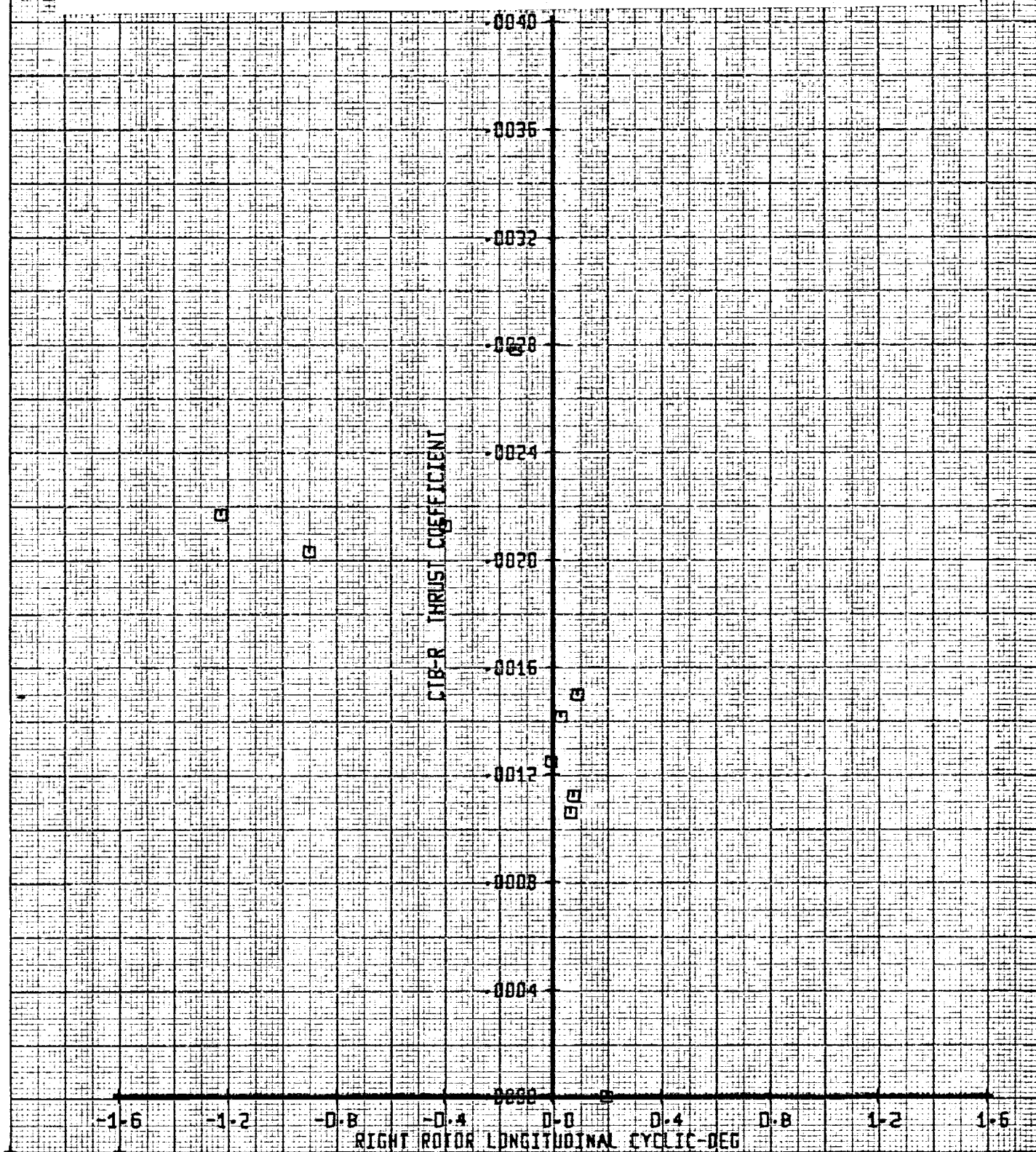
-1.

220

0

0

Figure 15-055. Right Rotor Thrust Coefficient Versus Right Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BVWT 182 VR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM

RUN

LEGEND

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

143

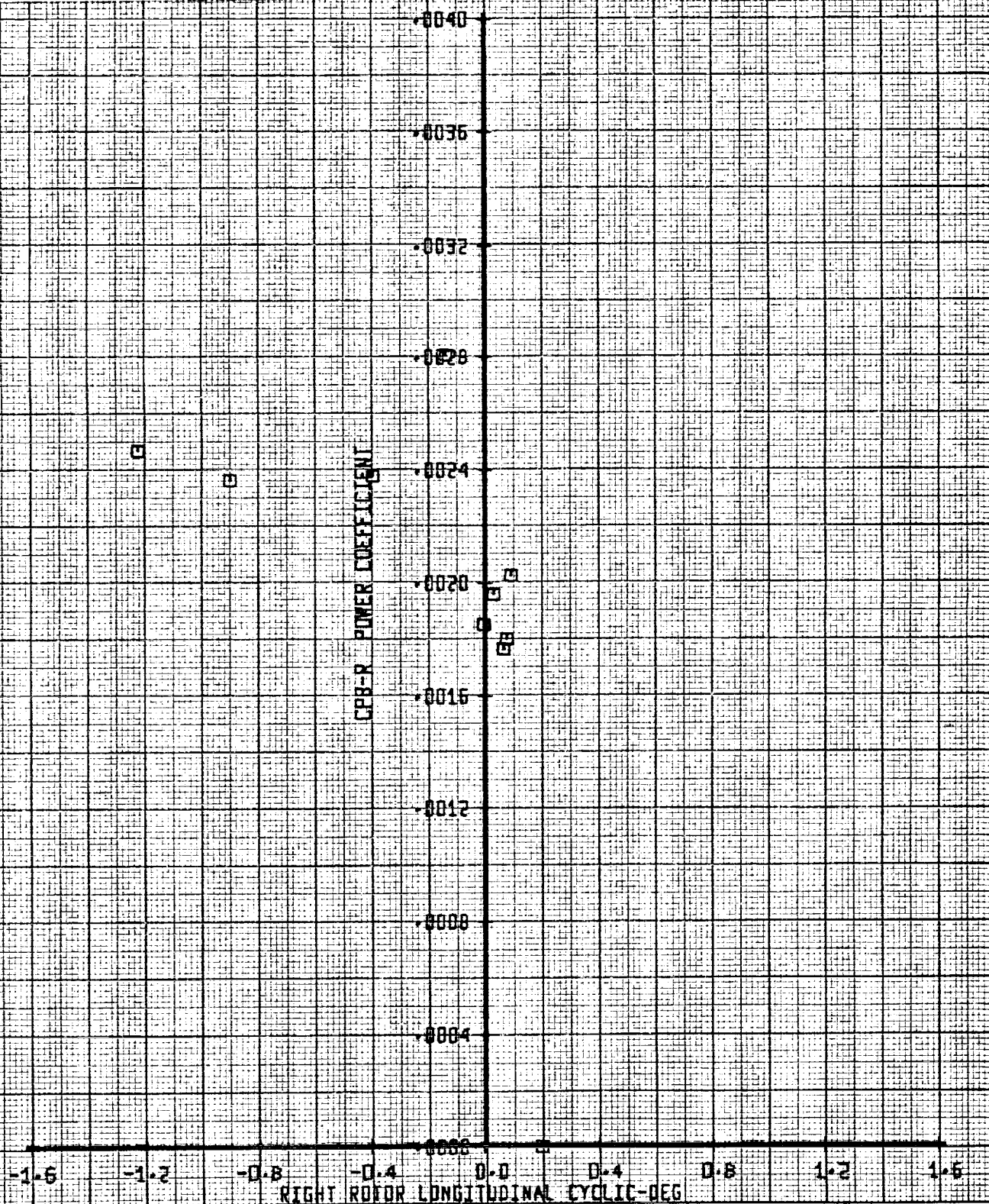
-1

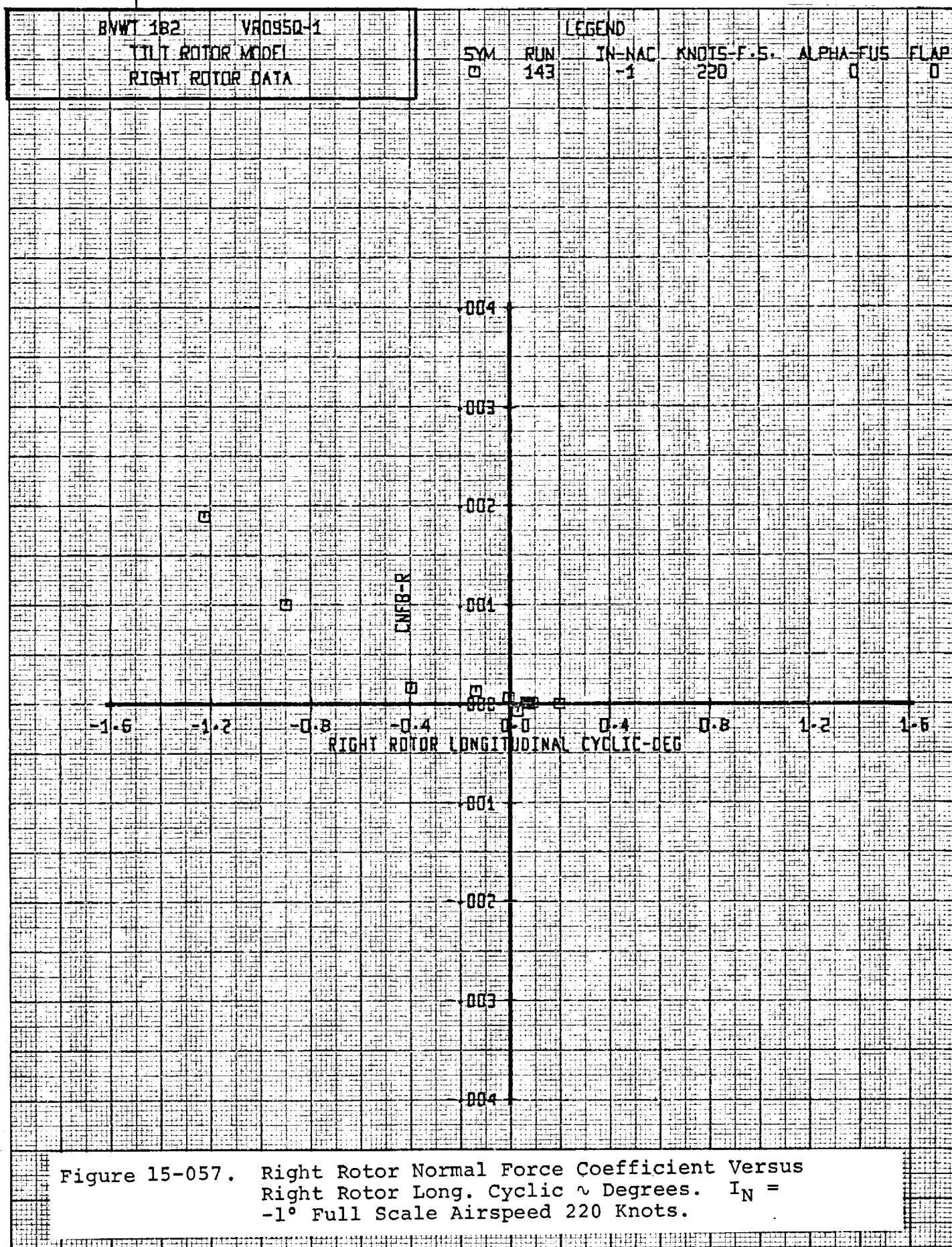
220

0

0

Figure 15-056. Right Rotor Power Coefficient Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 220 Knots.





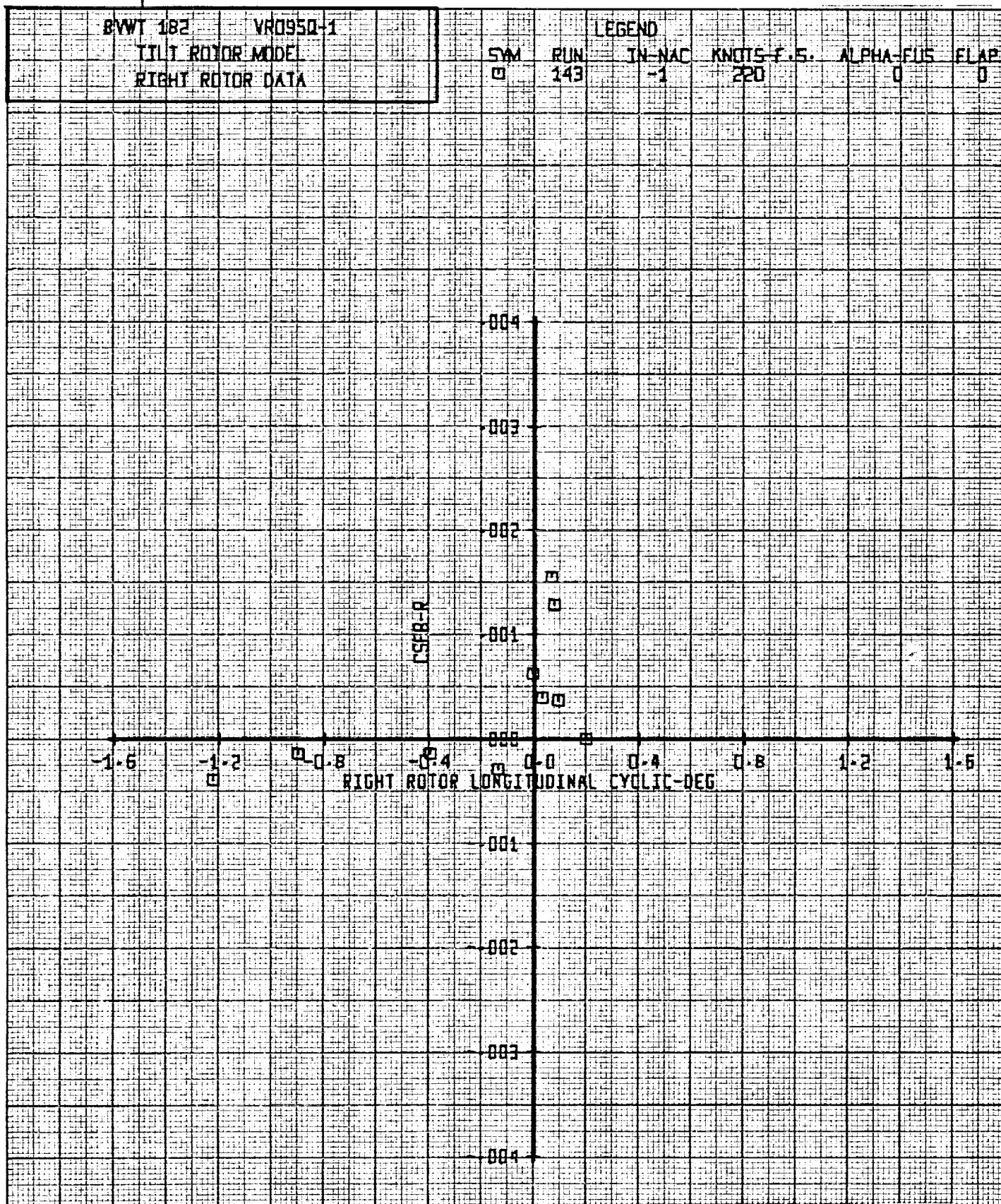


Figure 15-058. Right Rotor Side Force Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

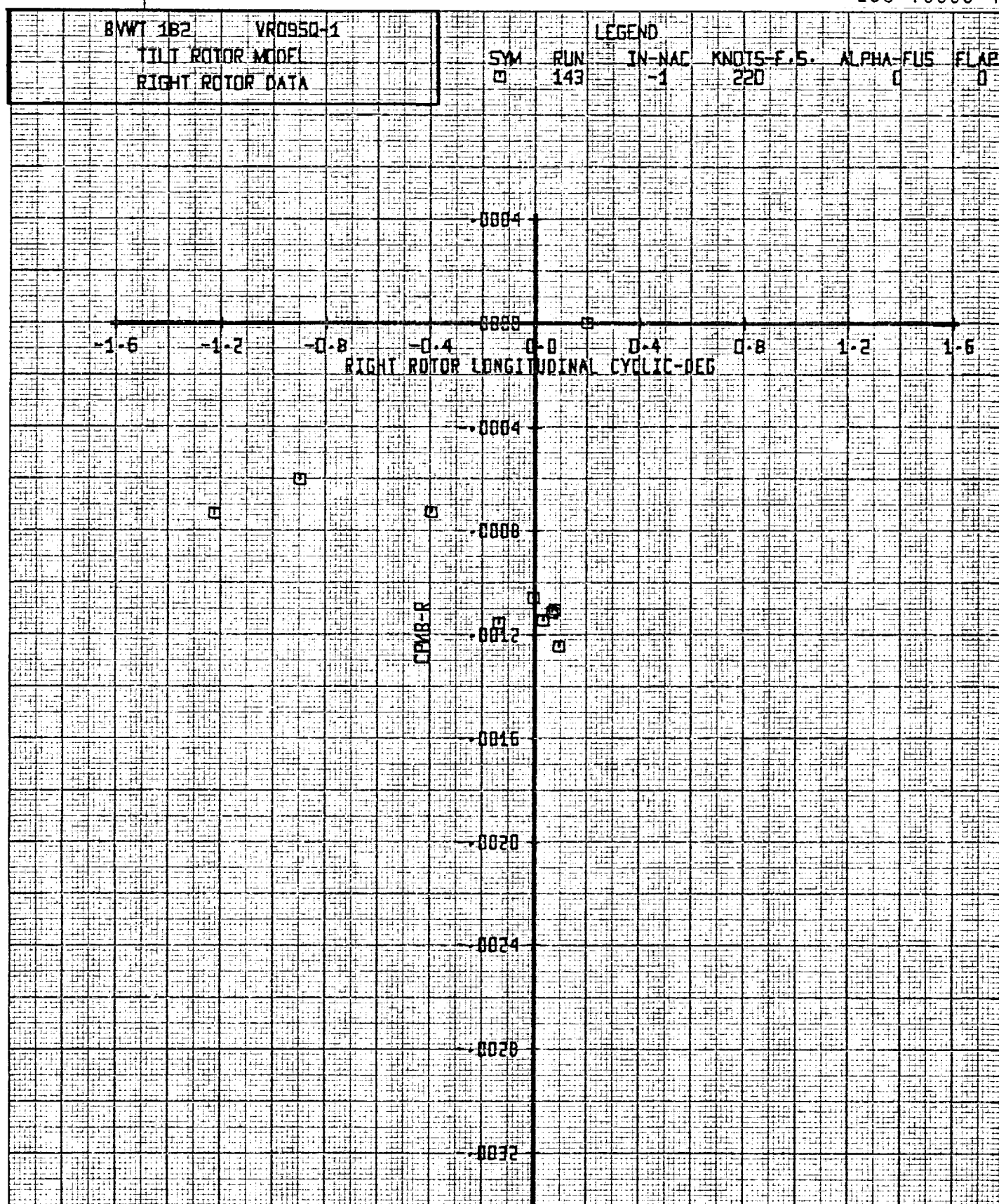


Figure 15-059. Right Rotor Pitching Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

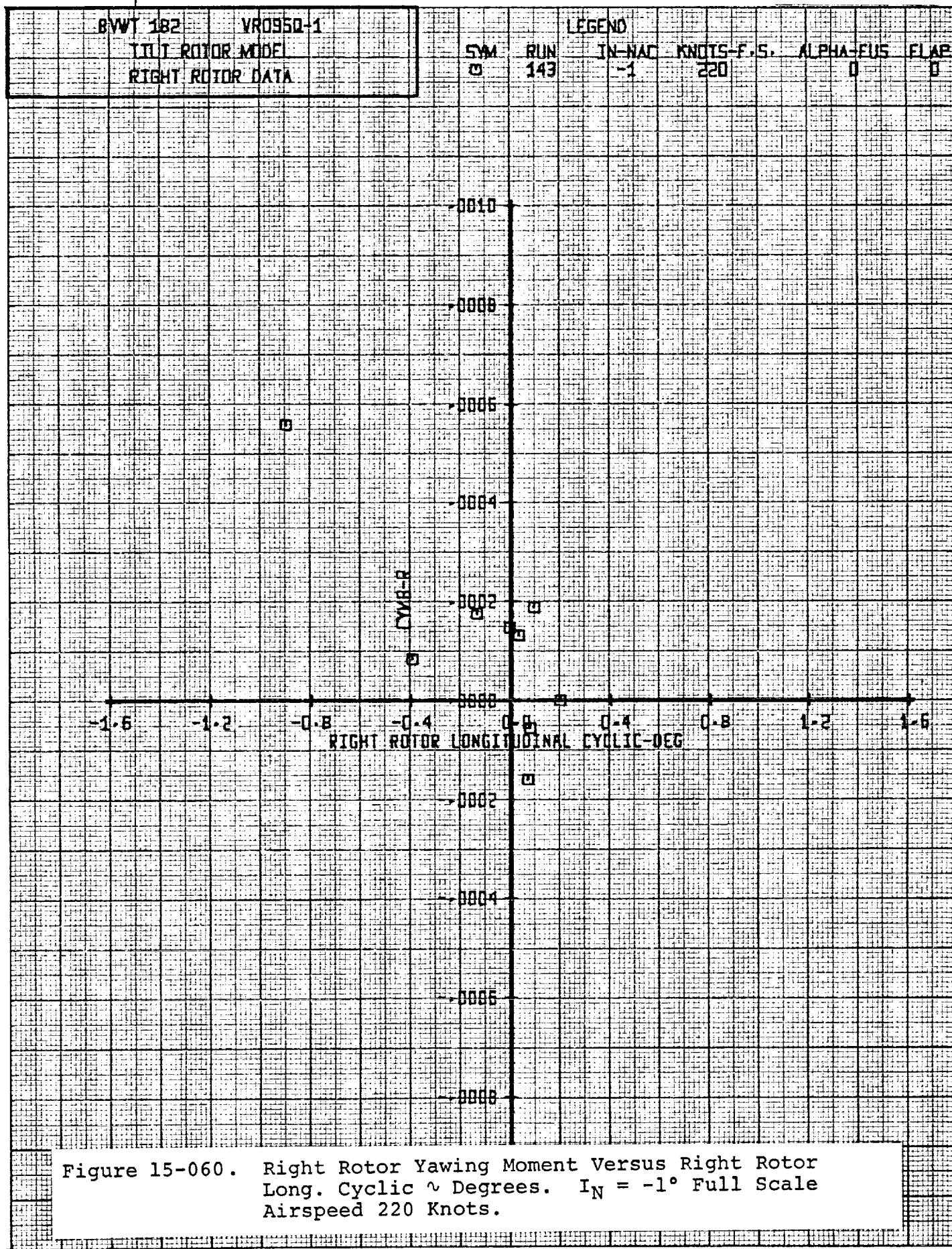
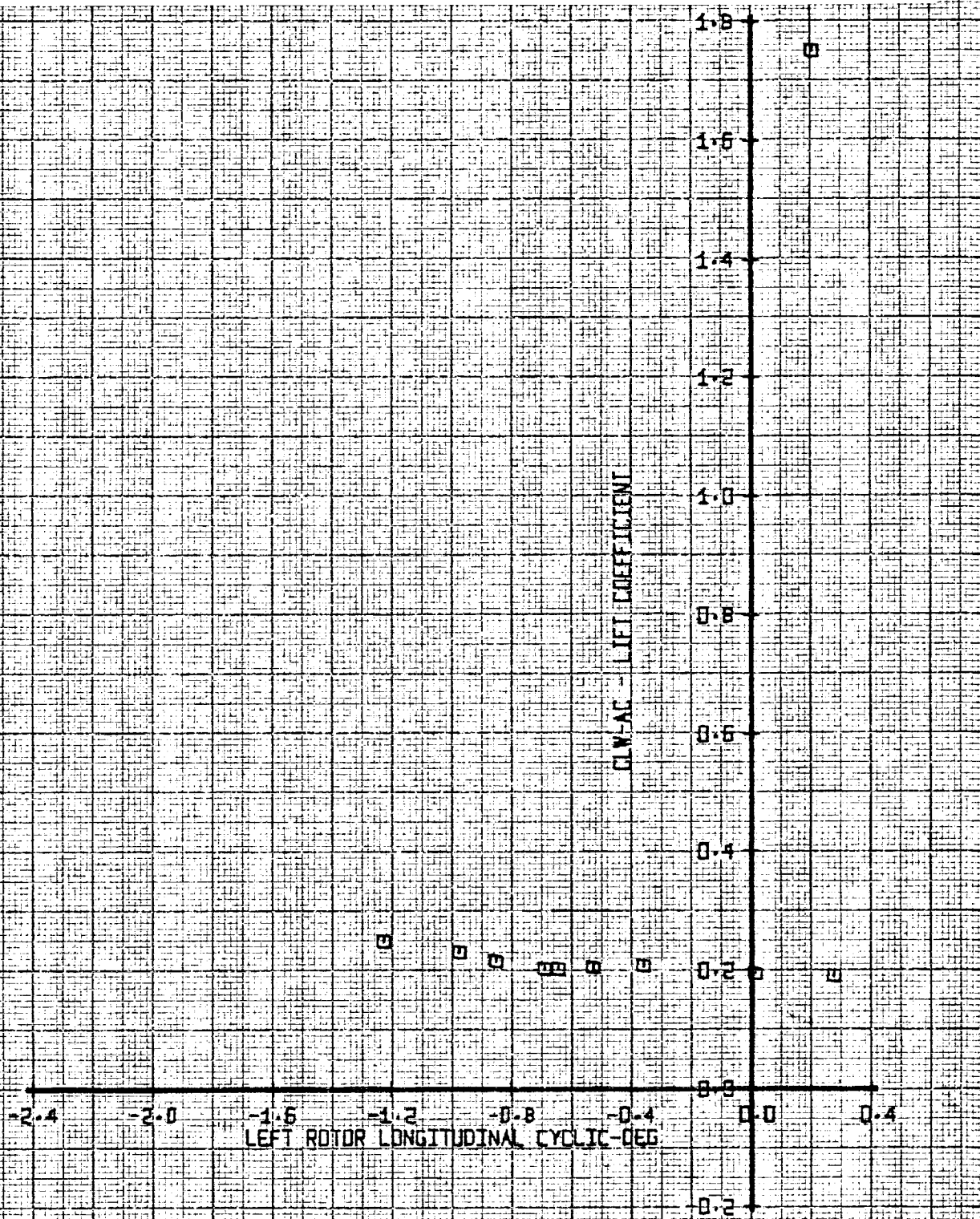


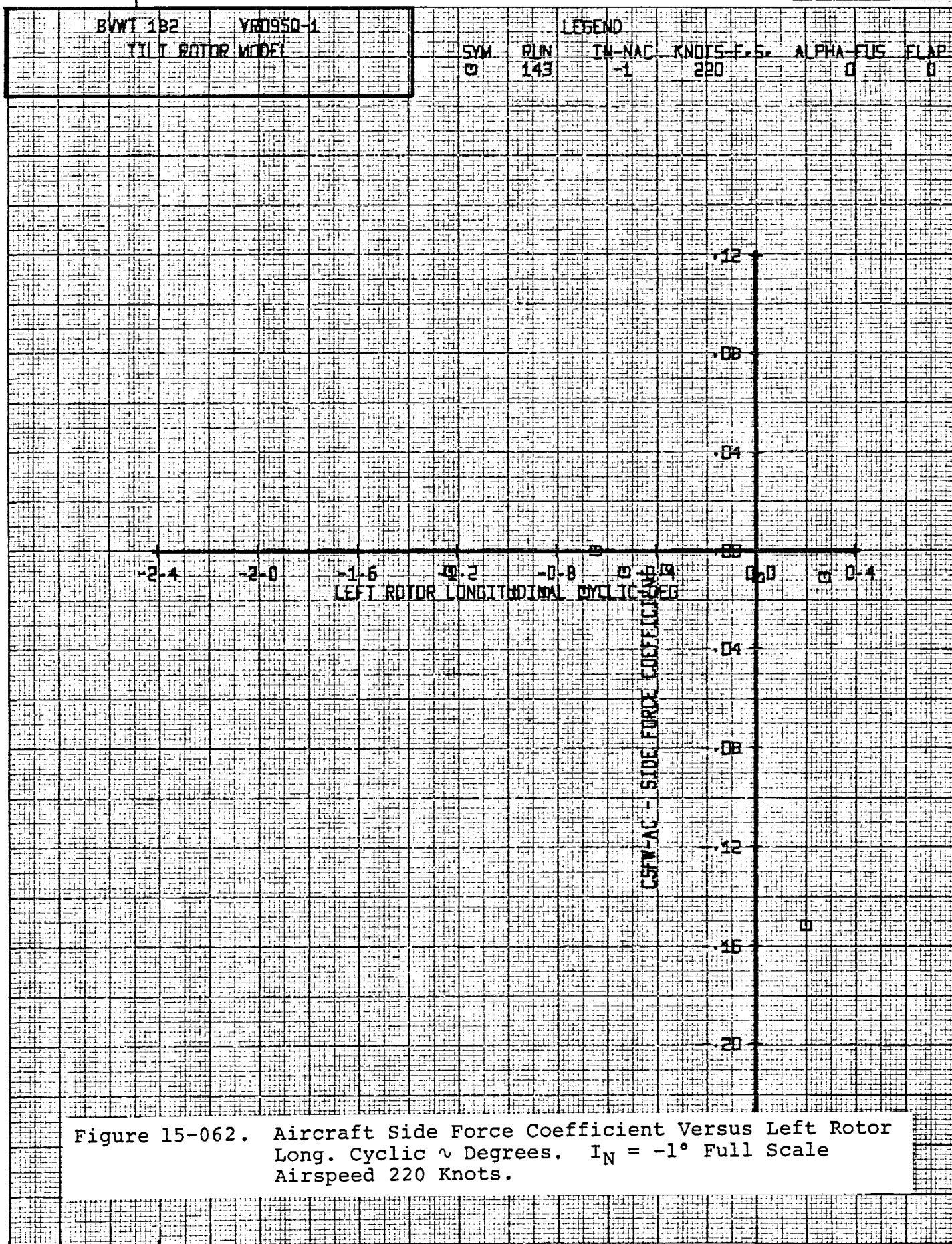
Figure 15-060. Right Rotor Yawing Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BVWT 1B2
 YR0950-1
 TILT ROTOR MODEL

 LEGEND
 SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
 □ 143 -1 220 0 0

Figure 15-061. Aircraft Lift Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.





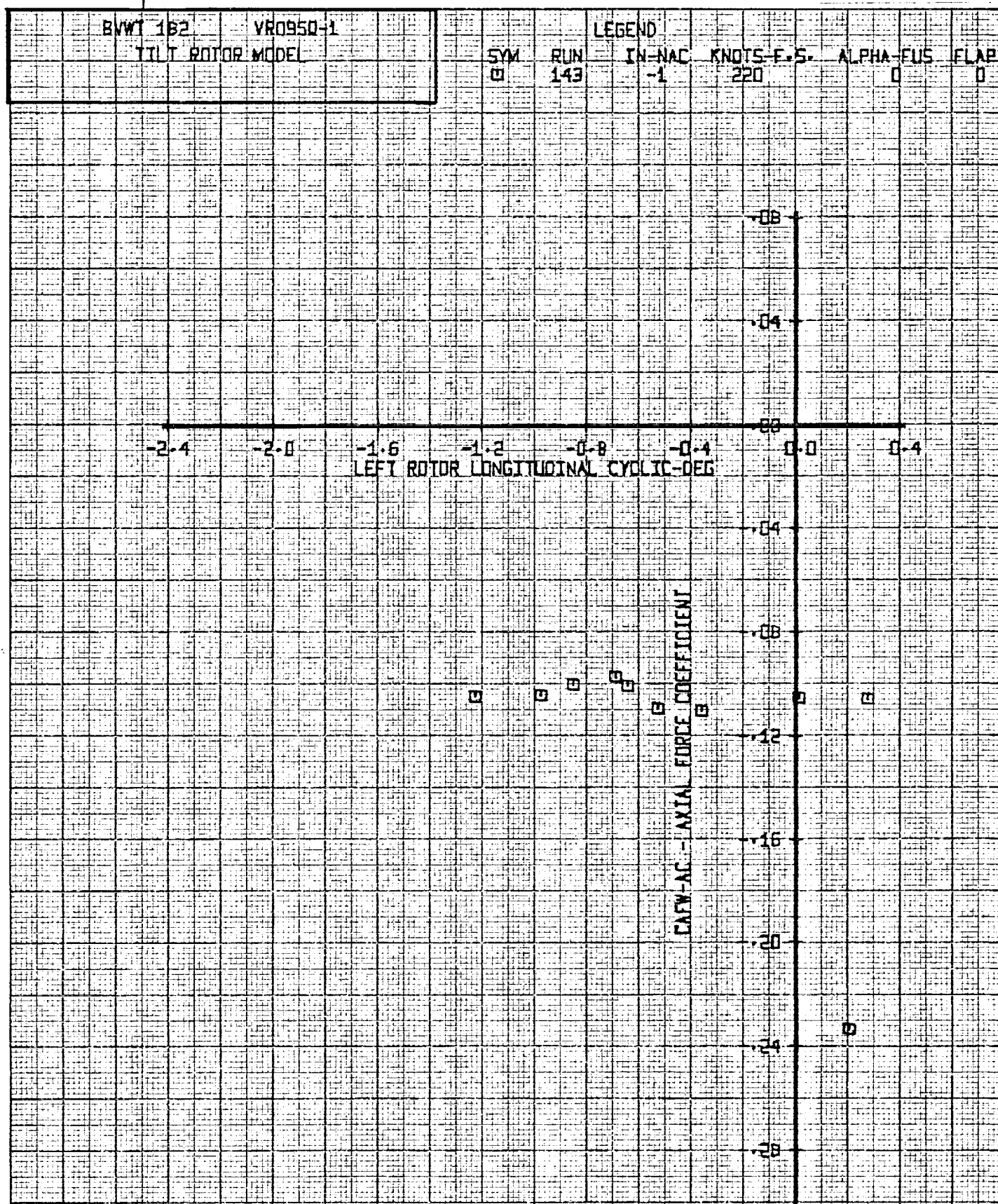


Figure 15-063. Aircraft Axial Force Coefficient Versus Left Rotor Long. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

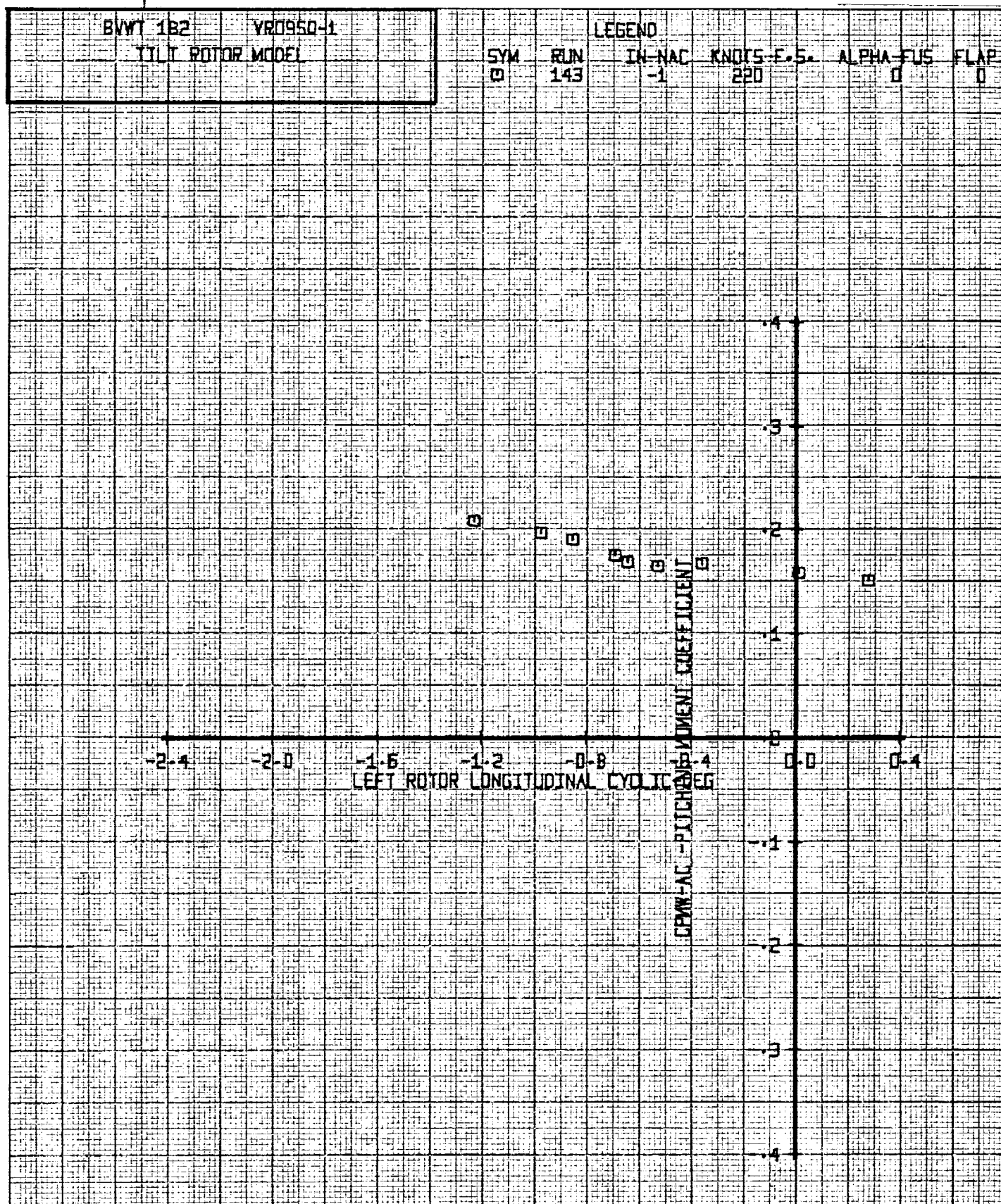


Figure 15-064. Aircraft Pitching Moment Coefficient Versus Left Rotor Long. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

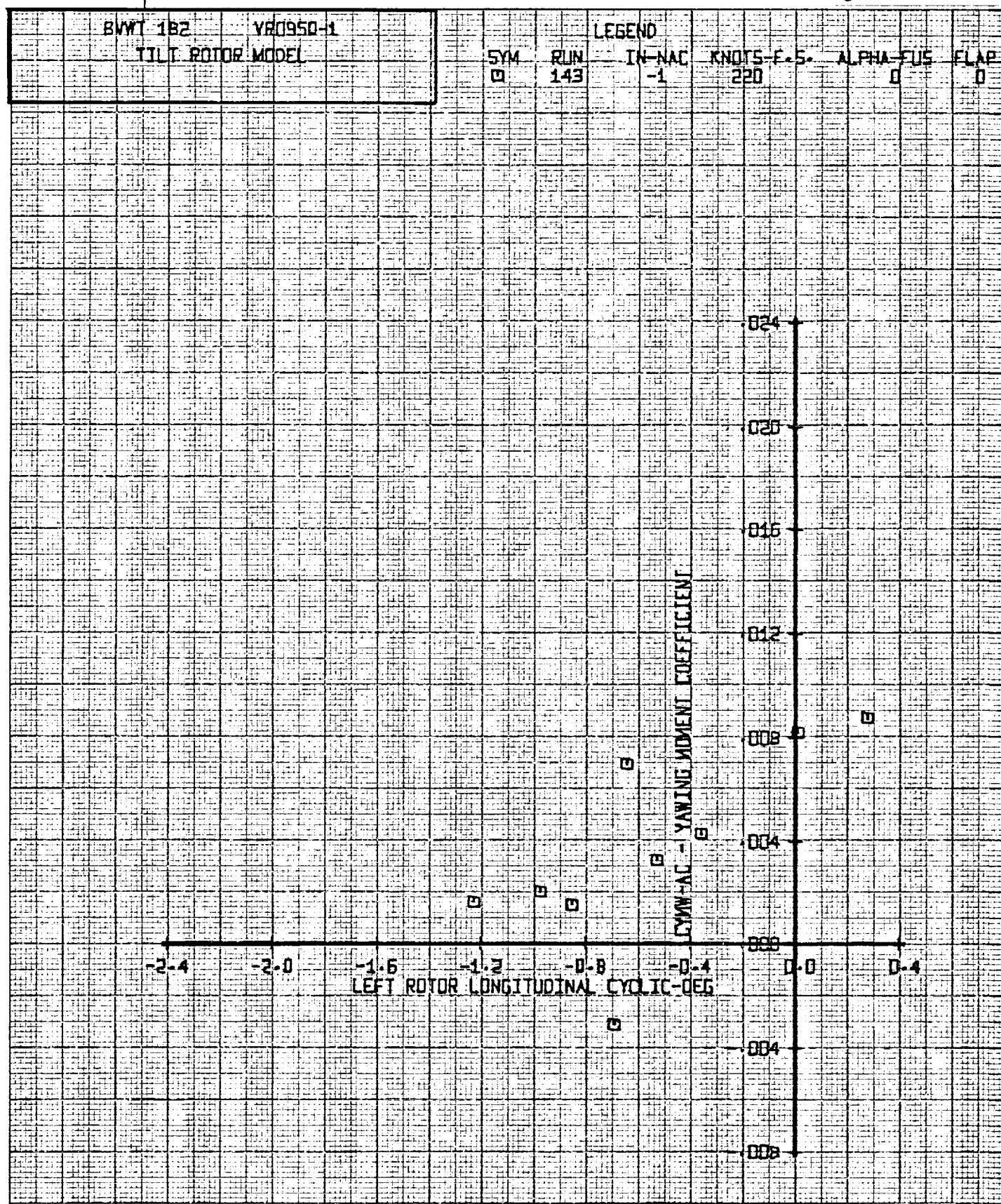


Figure 15-065. Aircraft Yawing Moment Coefficient Versus Left Rotor Long. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

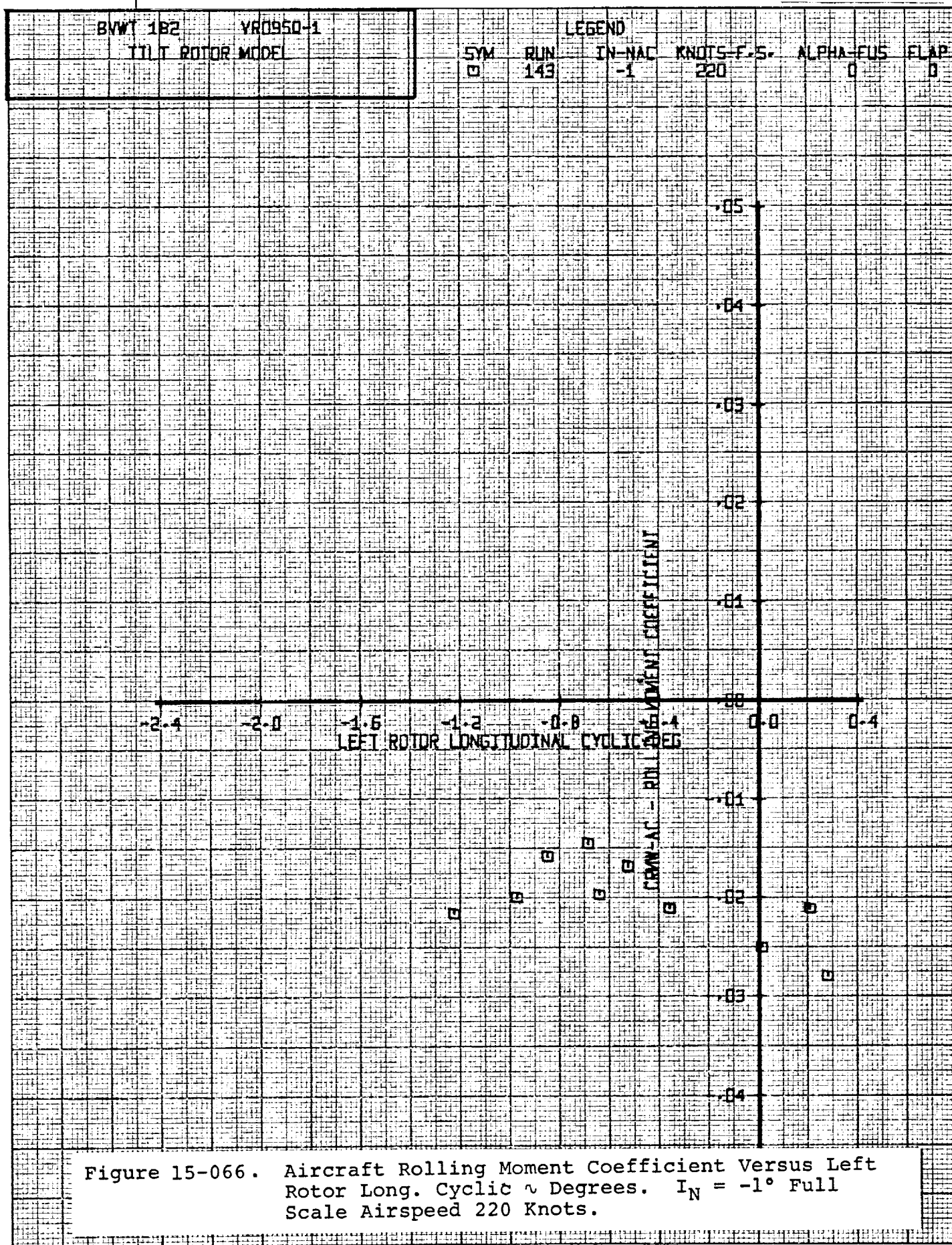


Figure 15-066. Aircraft Rolling Moment Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

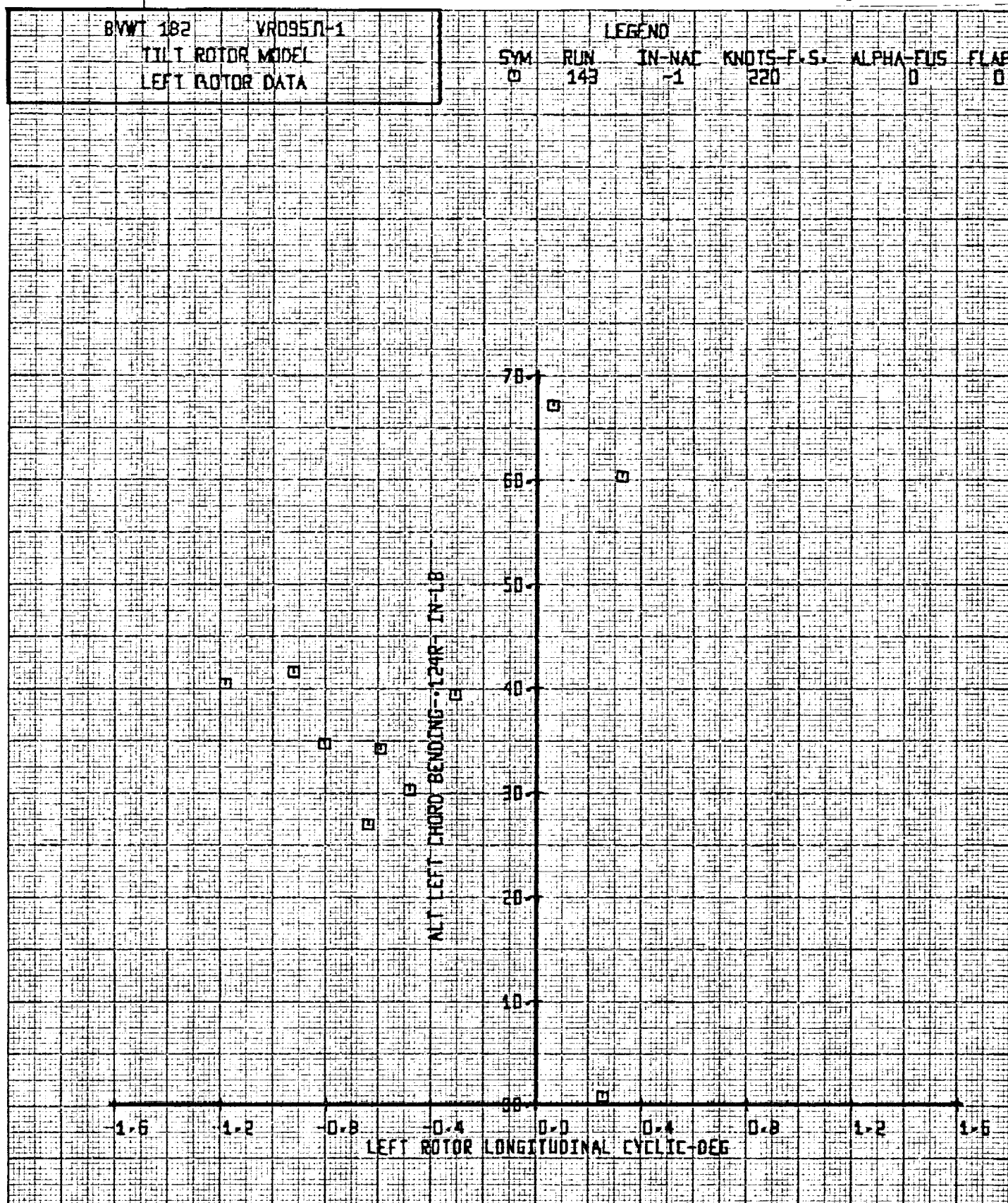


Figure 15-067. Alt. Left Chord Bending Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BVWT 182 YR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

143

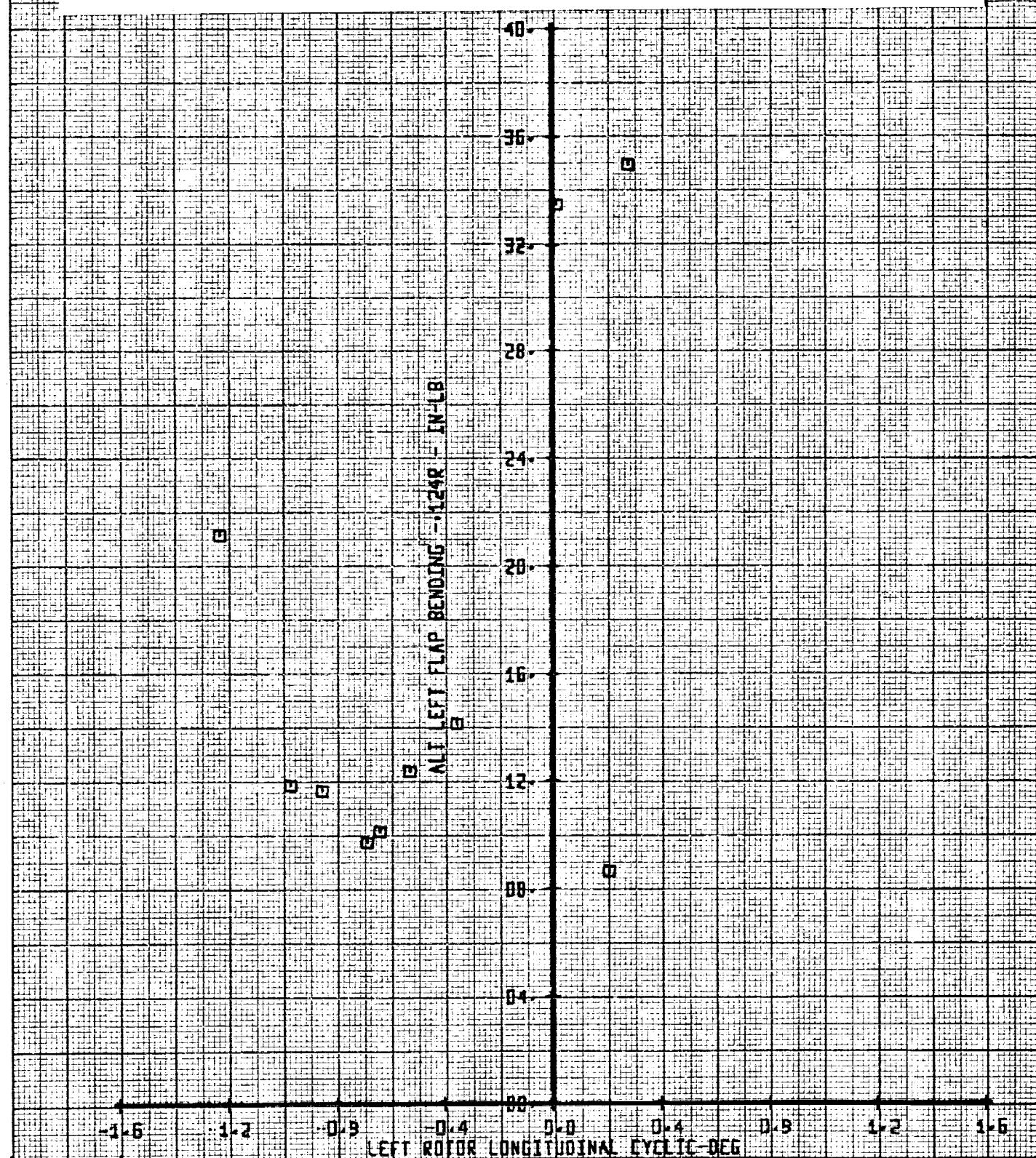
-1

220

0

0

Figure 15-068. Alt. Left Flap Bending Versus Left Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BVWT 182 VR095Q-1

TILT ROTOR MODEL

LEFT ROTOR DATA

SYM

□

RUN

143

LEGEND

IN-NAC

-1

KNOTS-F.S.

220

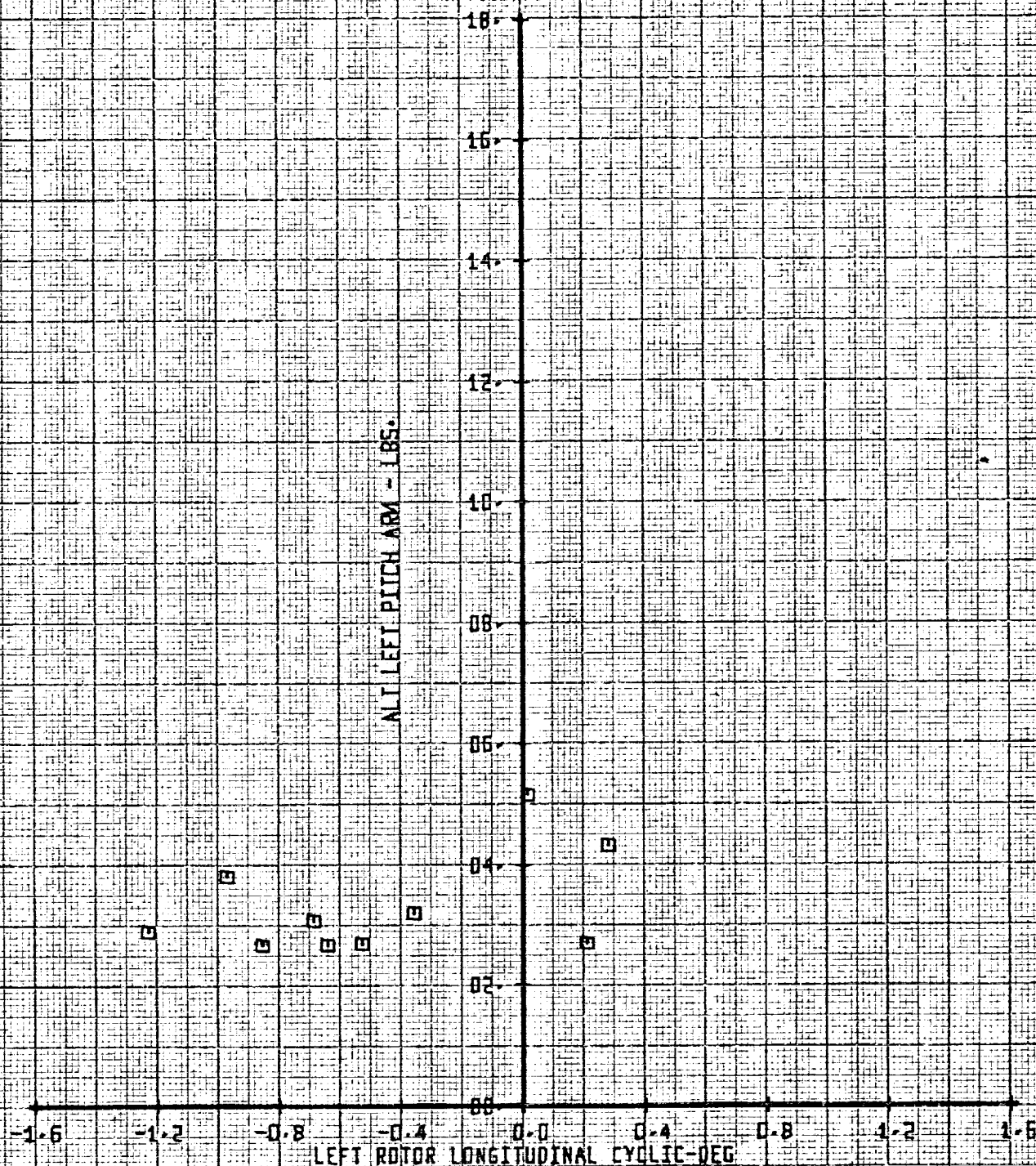
ALPHA-FUS

0

FLAP

0

Figure 15-069. Alt. Left Pitch Link Load Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BVWT 182 VR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM

RUN

143

LEGEND

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

-1

220

0

0

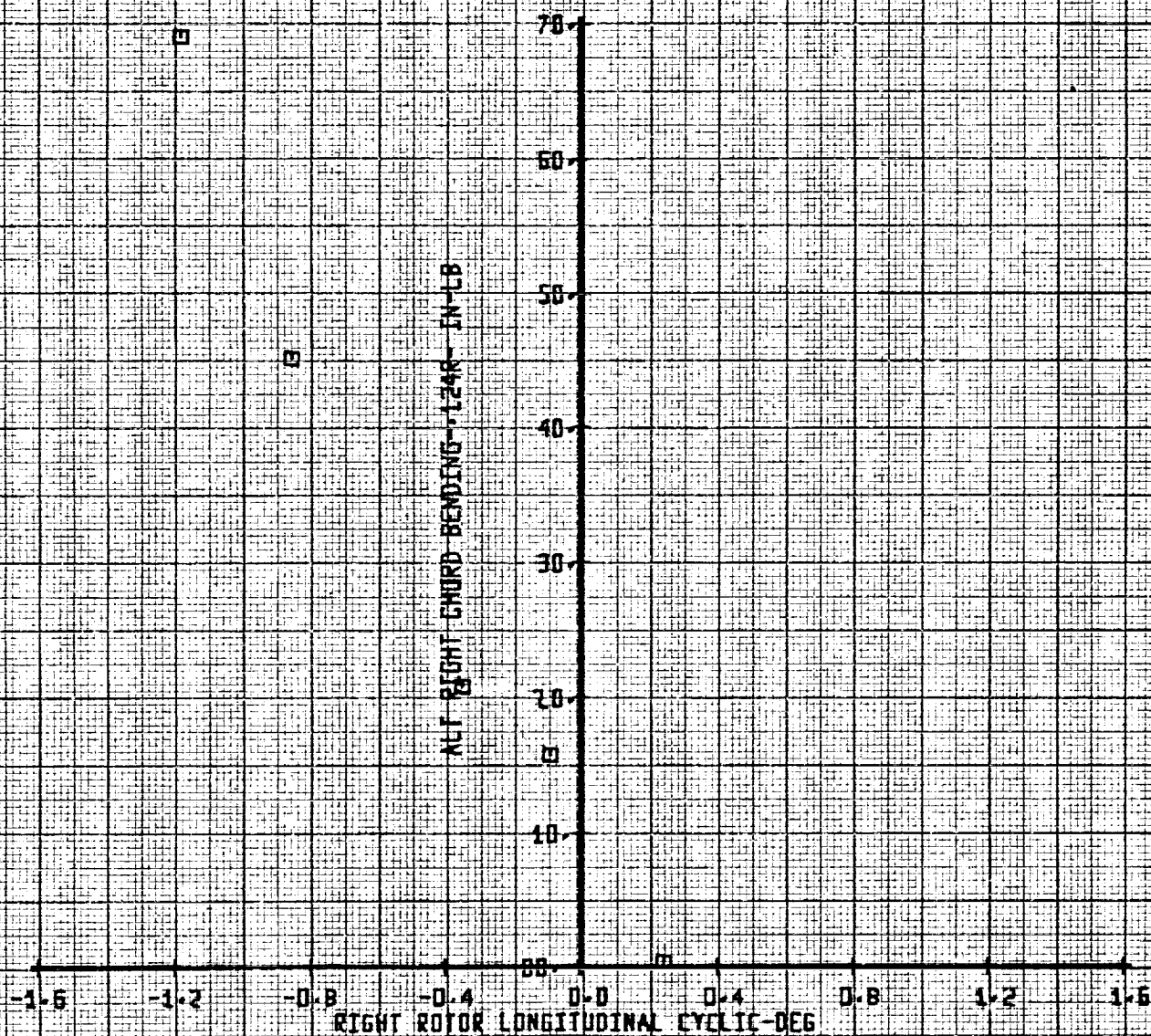
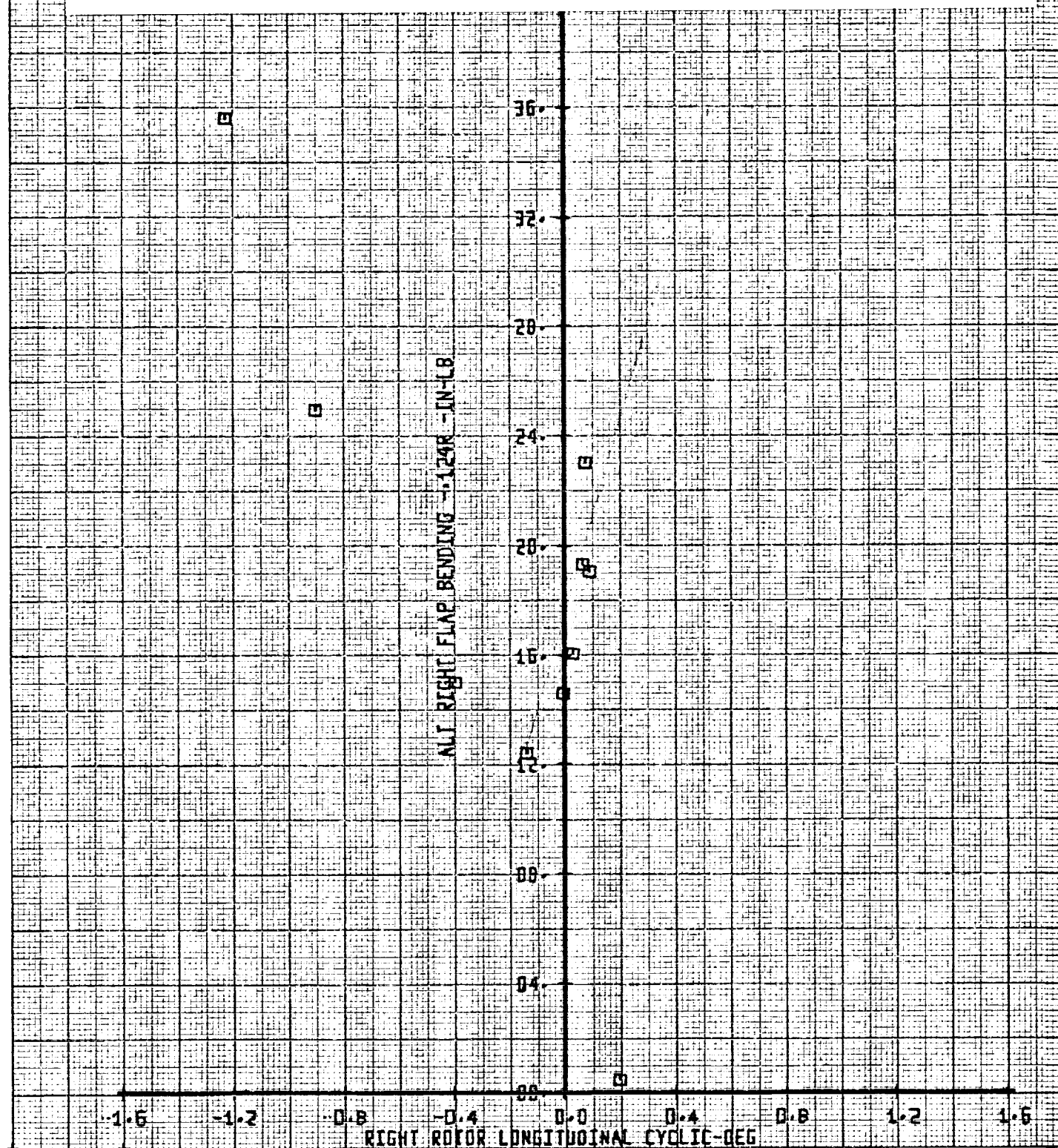


Figure 15-070. Alt. Right Chord Bending Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BVWT 182 YR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 143 -1 220 0 0

Figure 15-071. Alt. Right Flap Bending Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

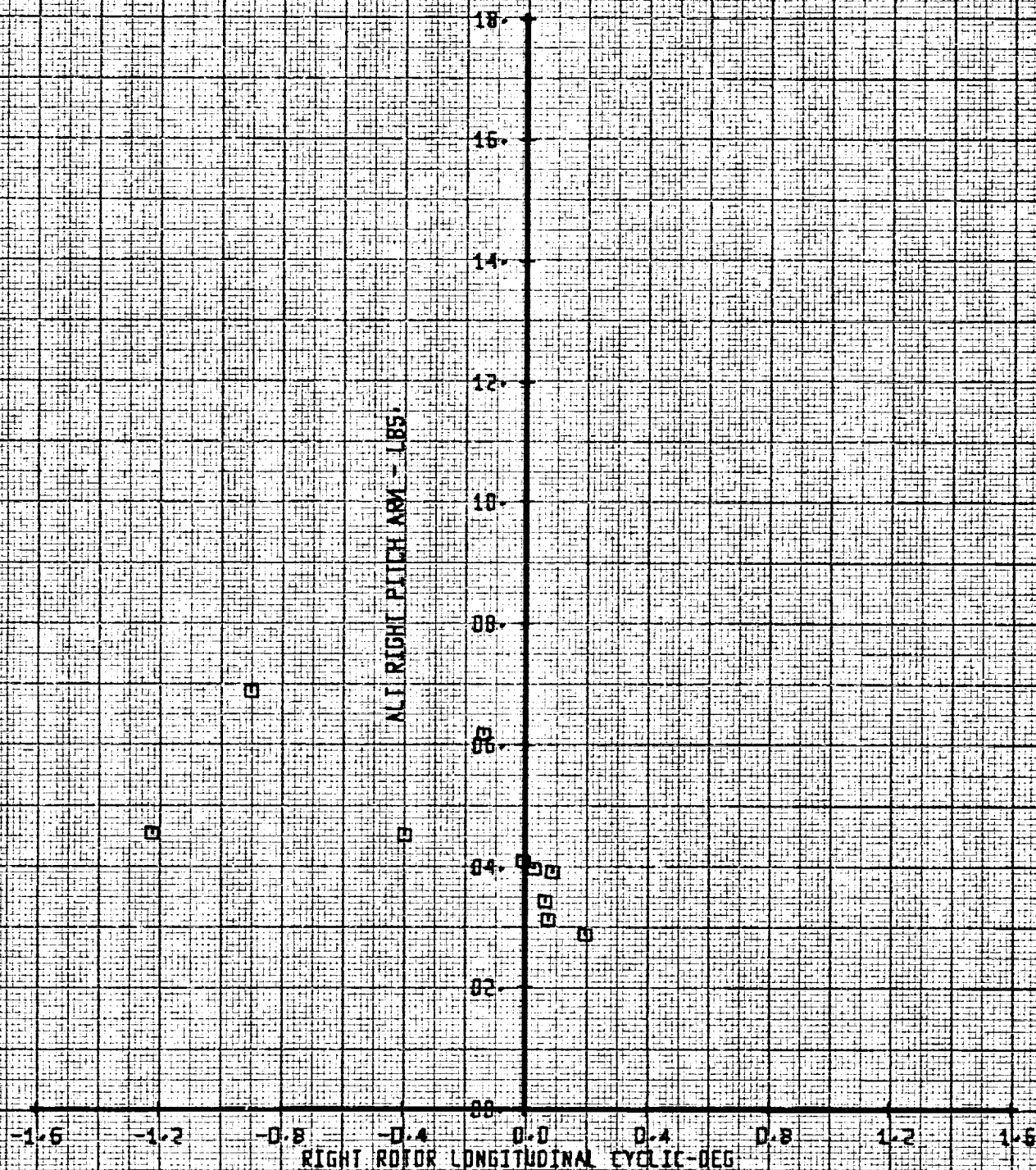


BVWT 182 VR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND

SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 143 -1. 220 0 0

Figure 15-072. Alt. Right Pitch Link Load Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BYWT 182 VR0950-1

LIT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

5M

RLIN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

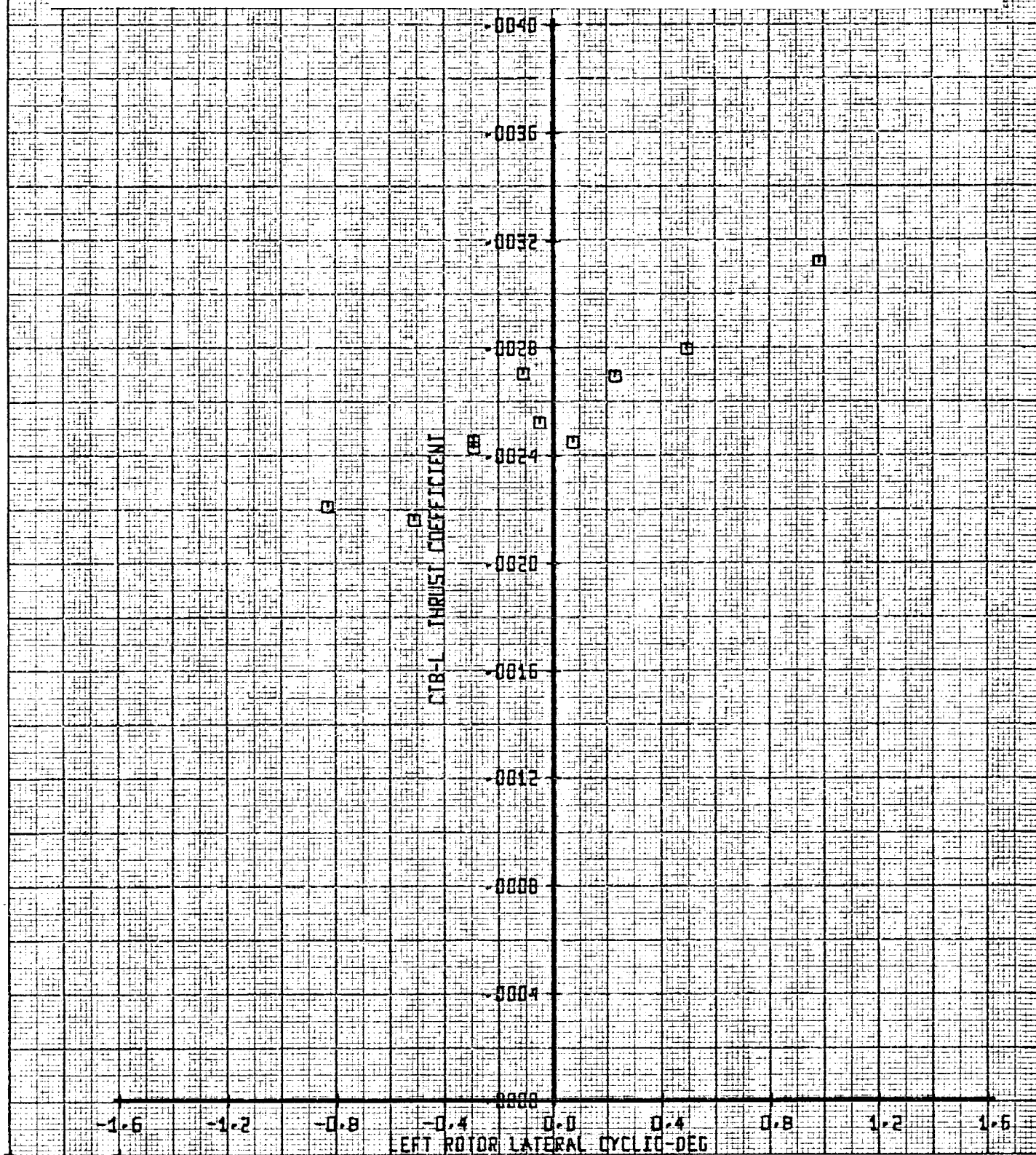
5

142

13

220

Figure 15-073. Left Rotor Thrust Coefficient Versus Left Rotor Lat. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BWWT 182 VR0950-1

TILT ROTOR MODE

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

142

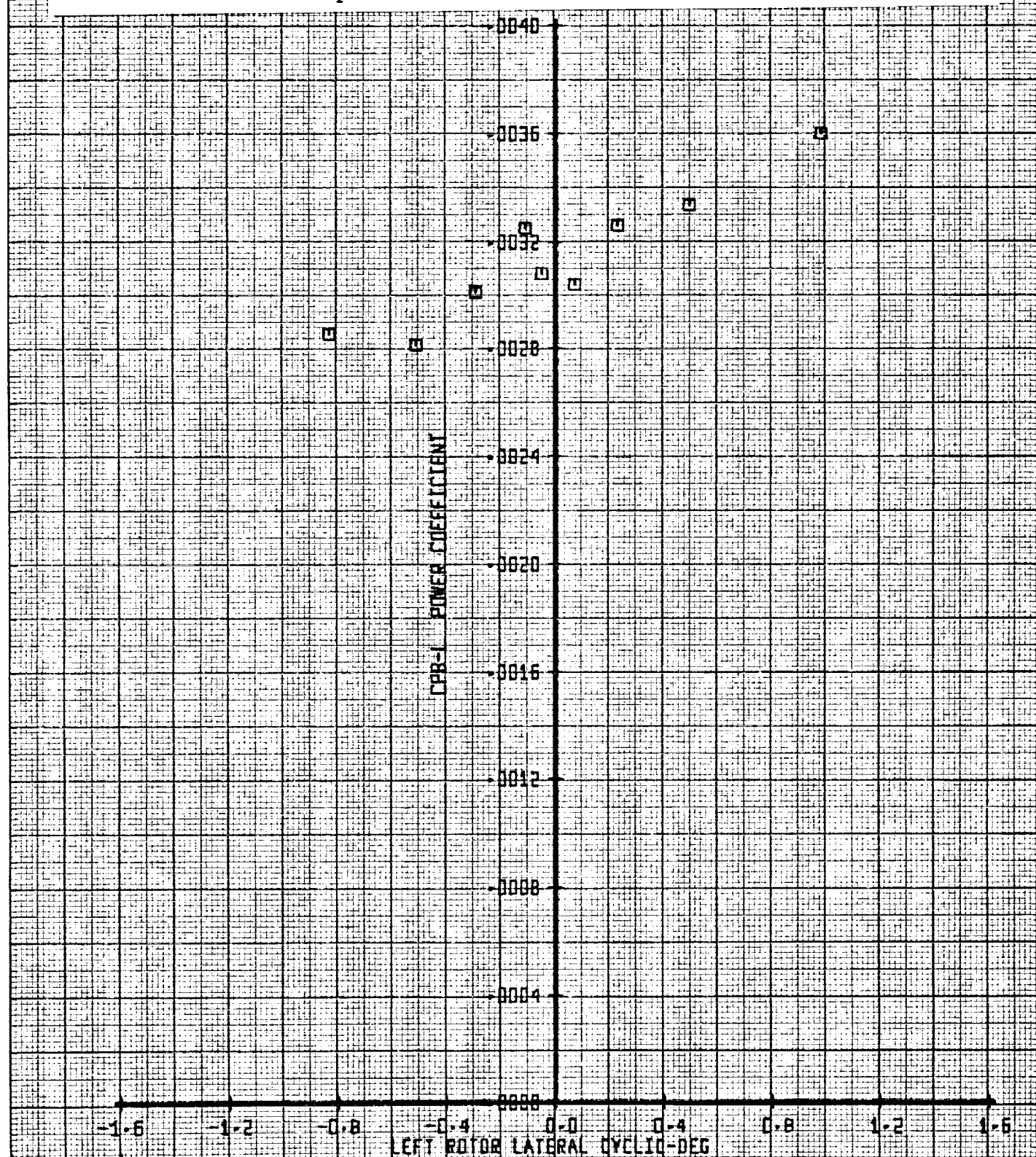
-1

220

0

0

Figure 15-074. Left Rotor Power Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 220 Knots.



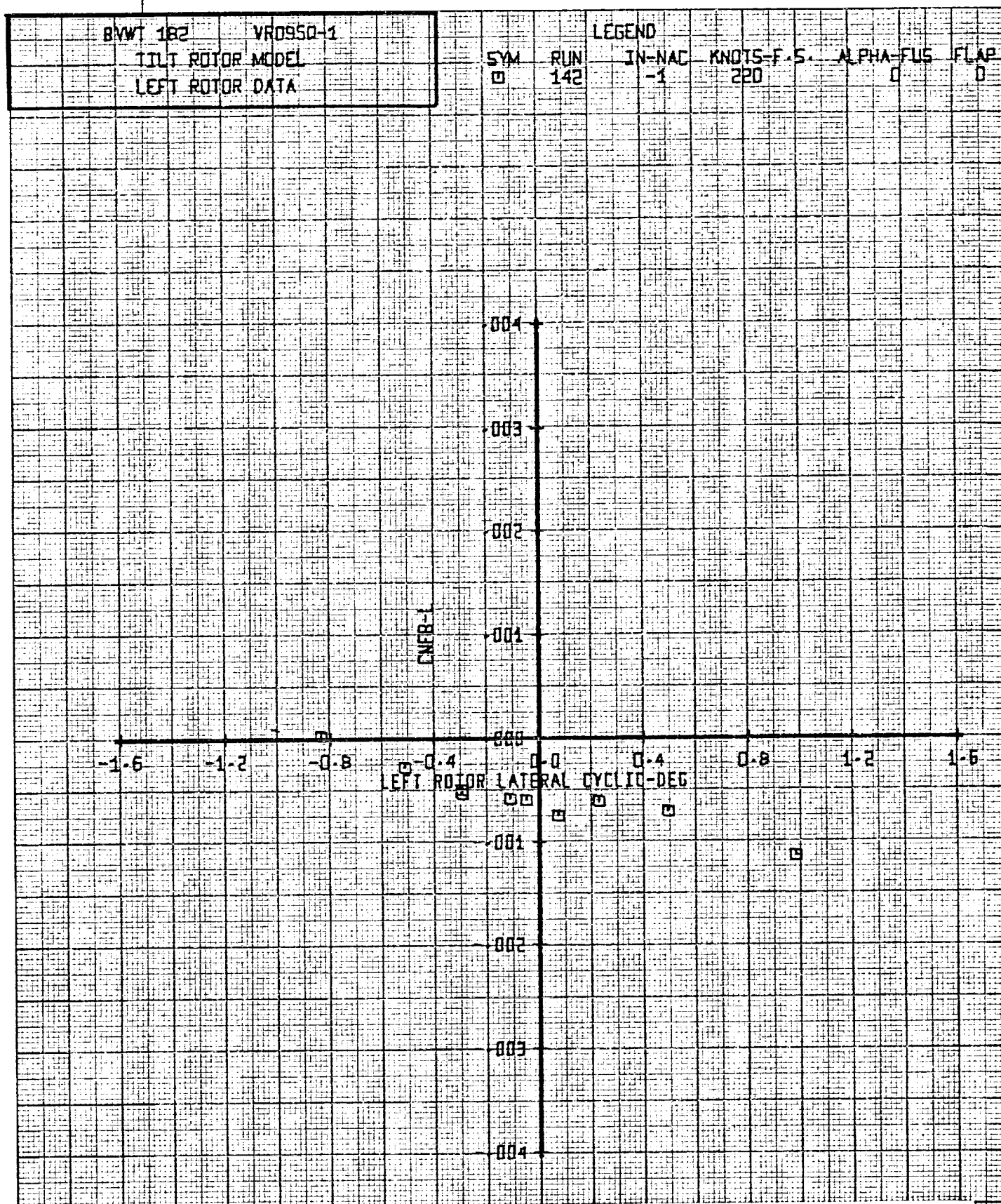


Figure 15-075. Left Rotor Normal Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

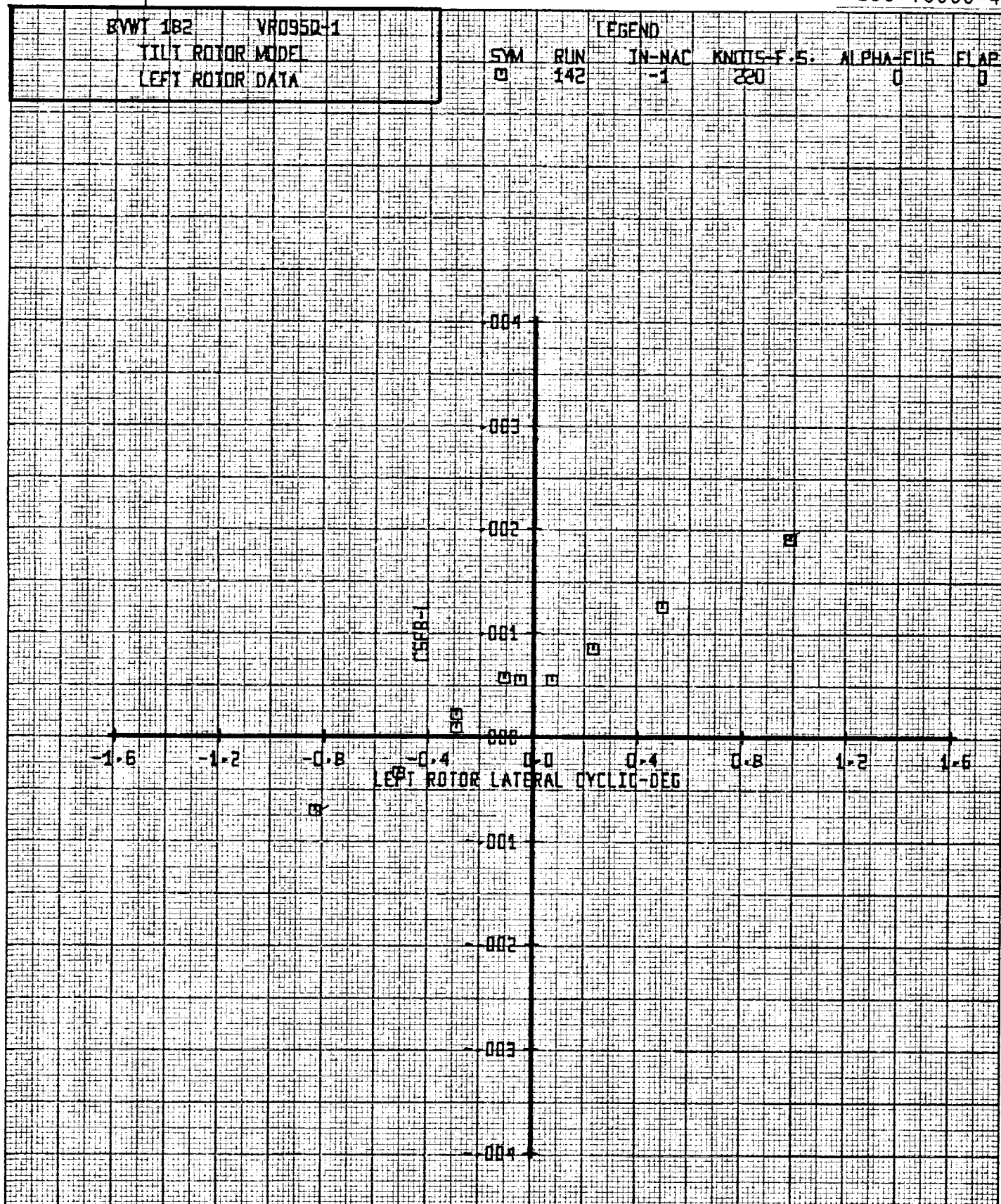


Figure 15-076. Left Rotor Side Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

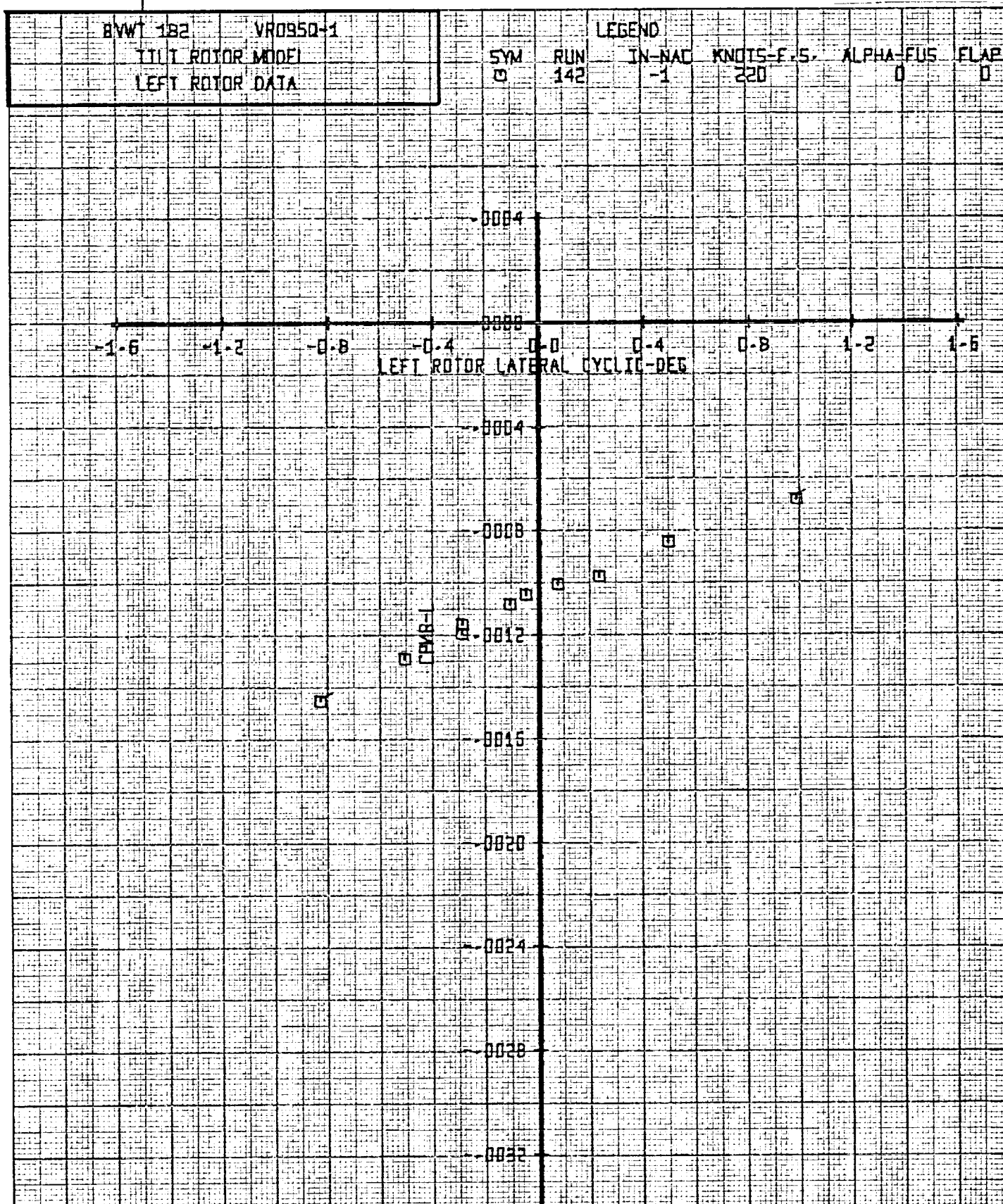


Figure 15-077. Left Rotor Pitching Moment Coefficient Versus Left Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BYWT 182 VR0550-1

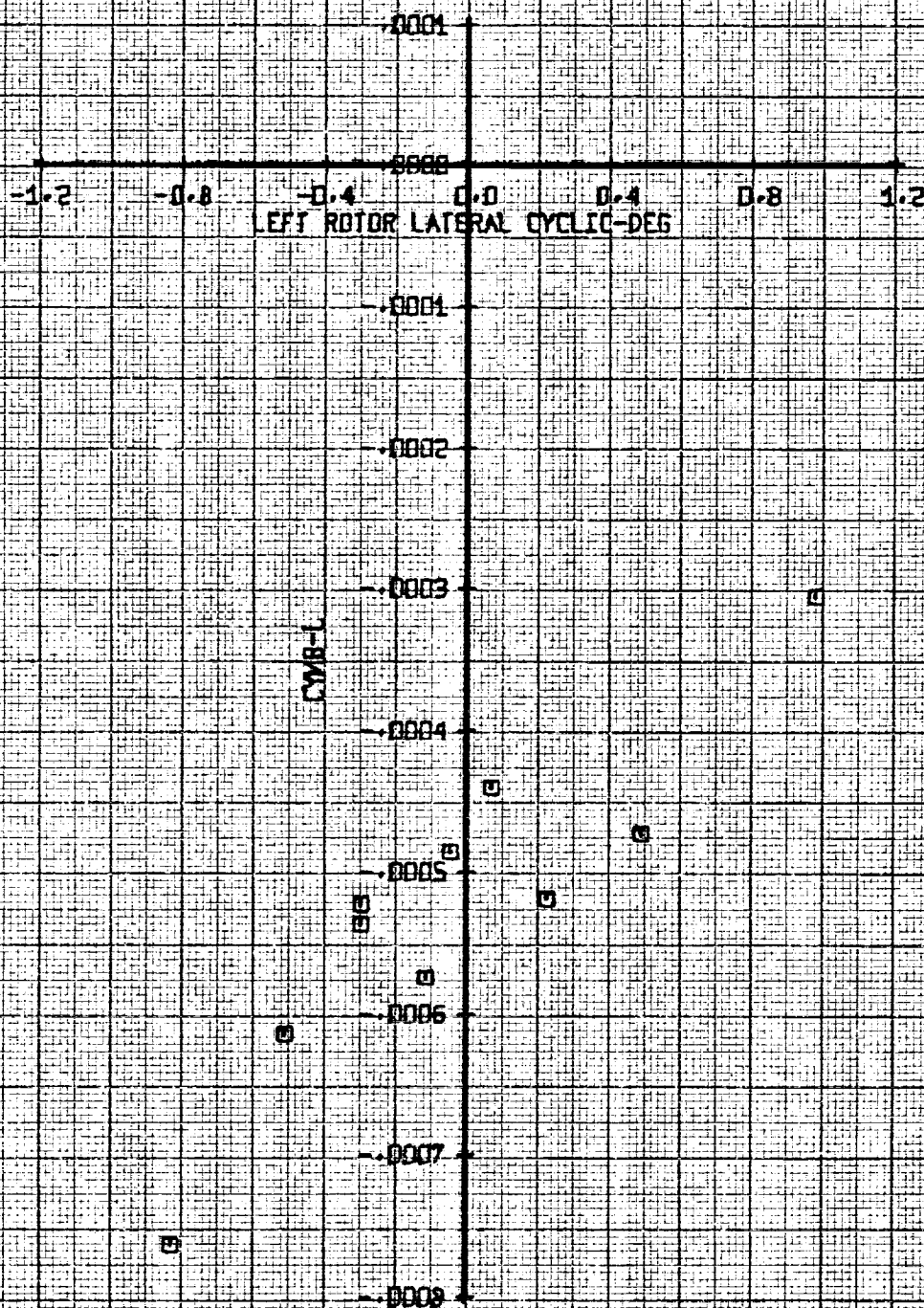
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

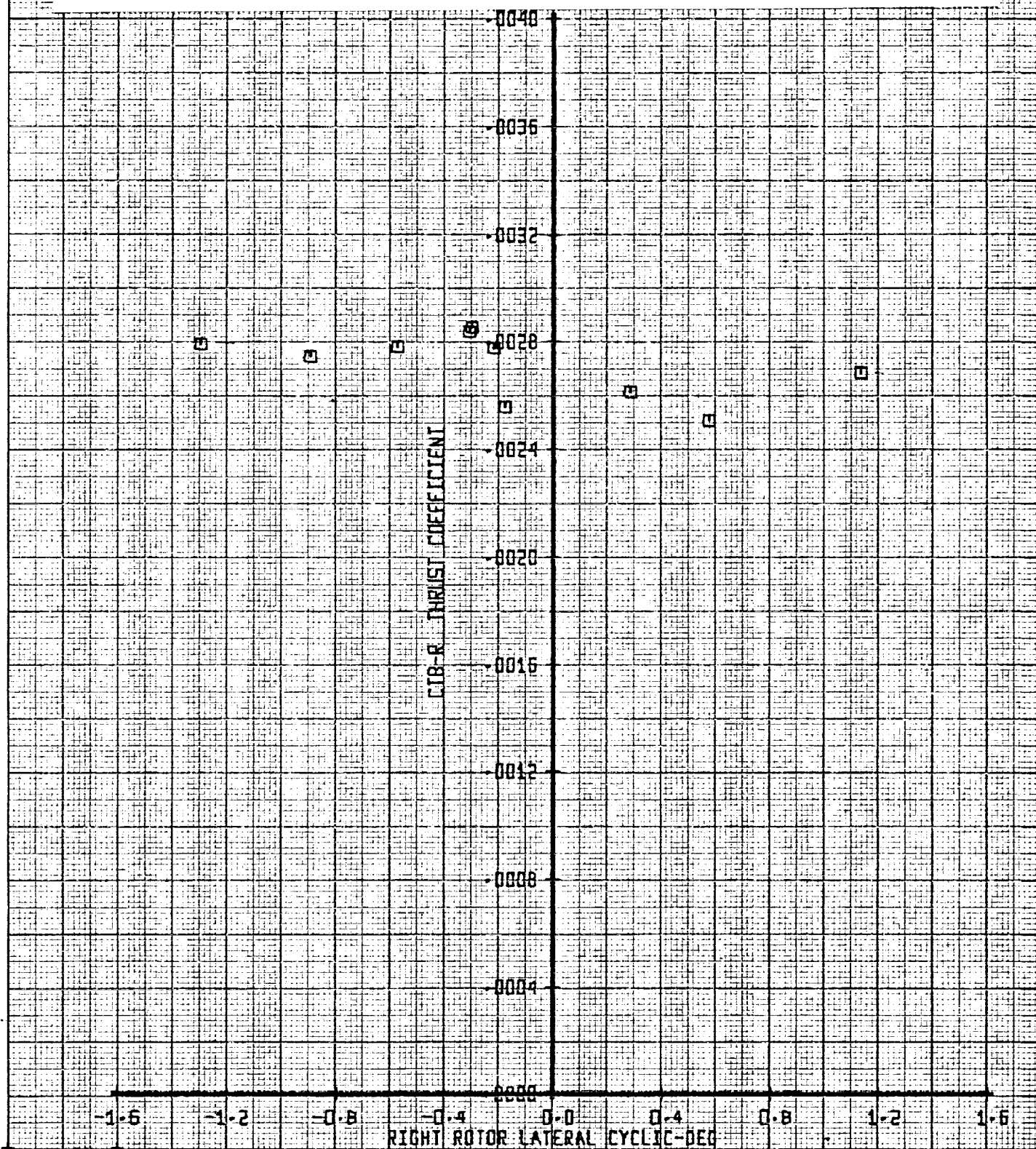
SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	142	-1	220	0	0

Figure 15-078. Left Rotor Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BNWT 182	VR0950-1								
TILT ROTOR MODEL		SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP		
RIGHT ROTOR DATA		0	142	-1	220	0	0		

Figure 15-079. Right Rotor Thrust Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BYWT 182 VR0950-1

TILT ROTOR MODE

RIGHT ROTOR DATA

LEGEND

SM
U

RUN
 147

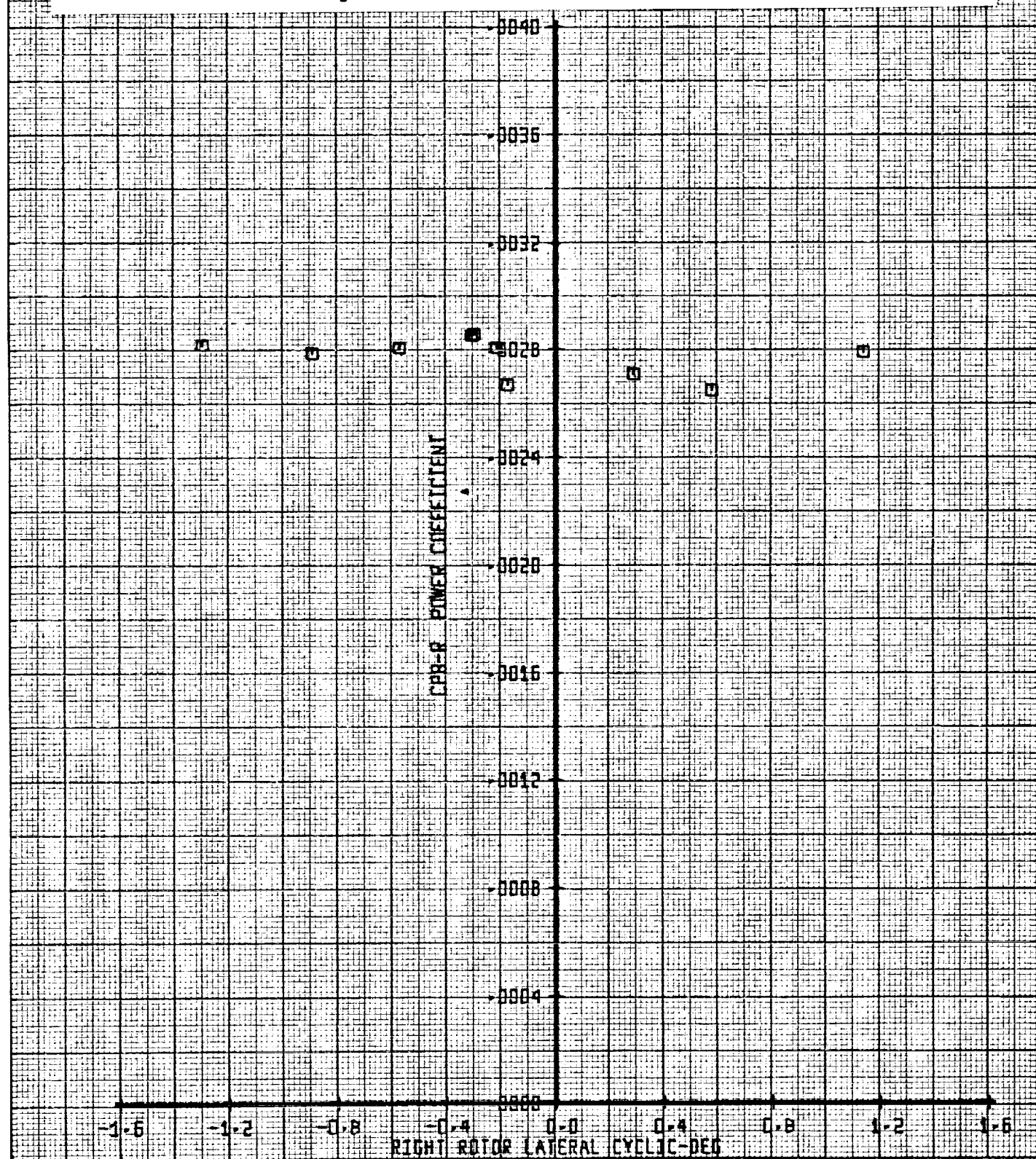
IN-NAC

KN015-F.5.

ALPHA-E115

FLAP

Figure 15-080. Right Rotor Power Coefficient Versus Right Rotor Lat. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 220 Knots.



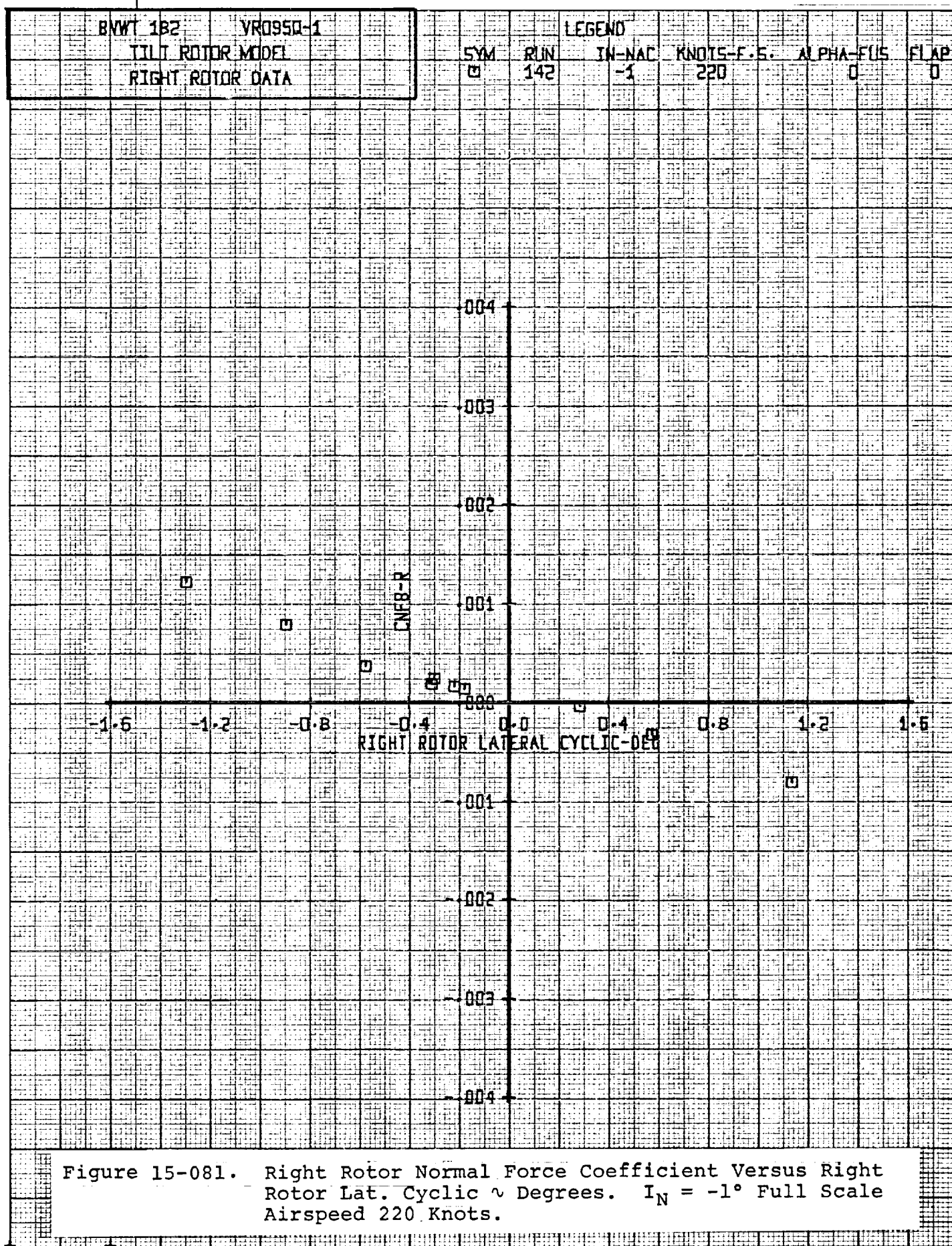


Figure 15-081. Right Rotor Normal Force Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

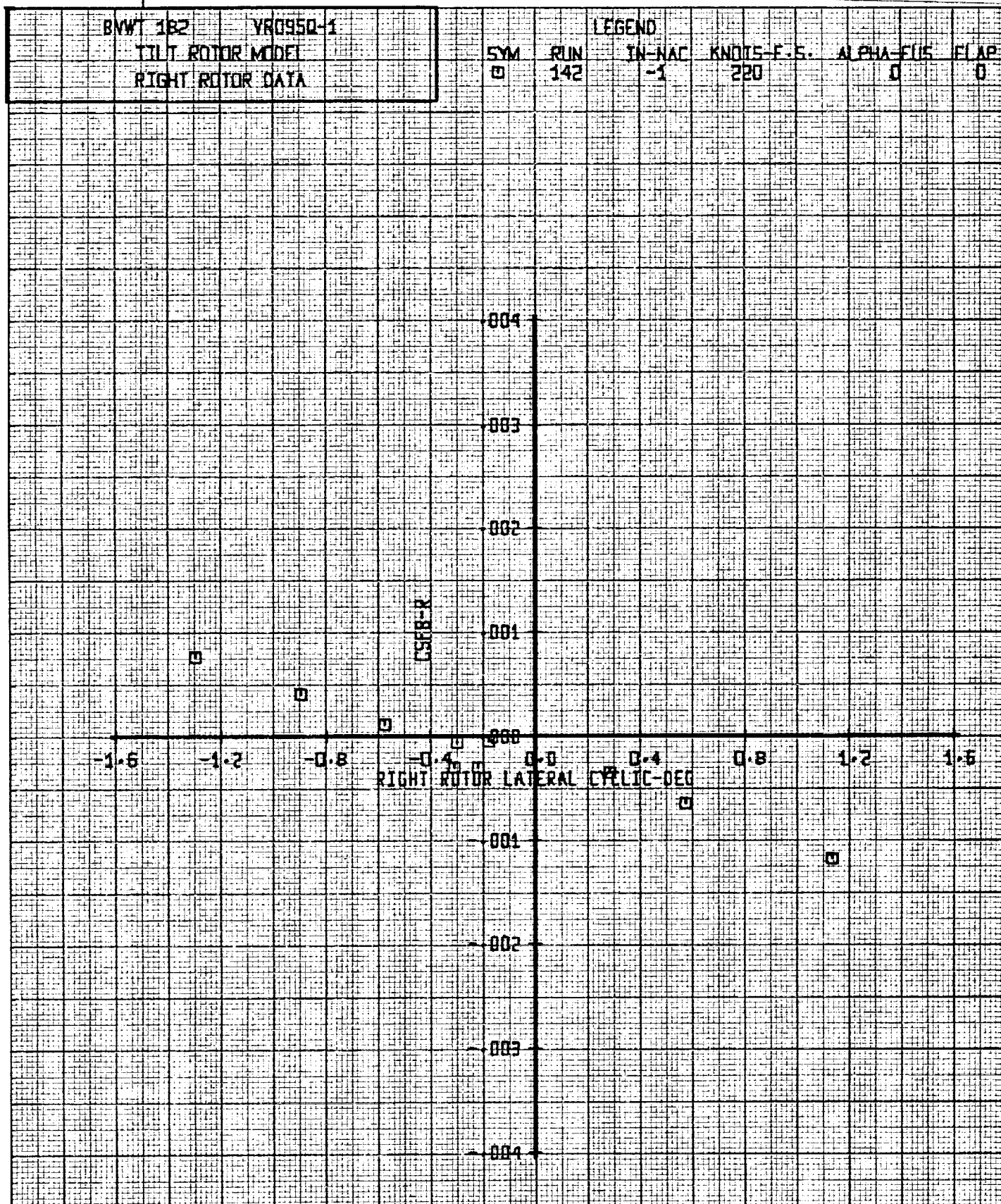


Figure 15-082. Right Rotor Side Force Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

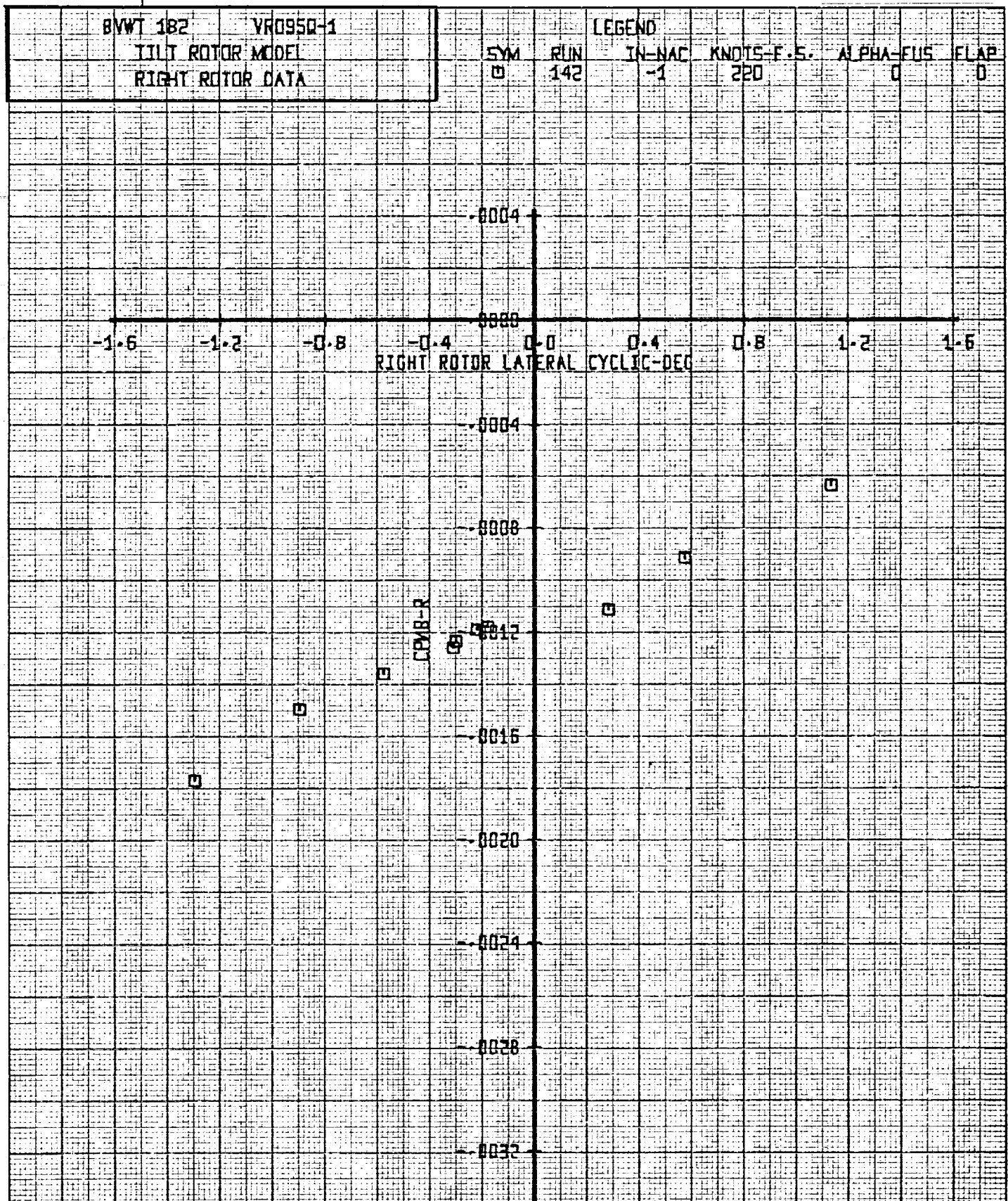
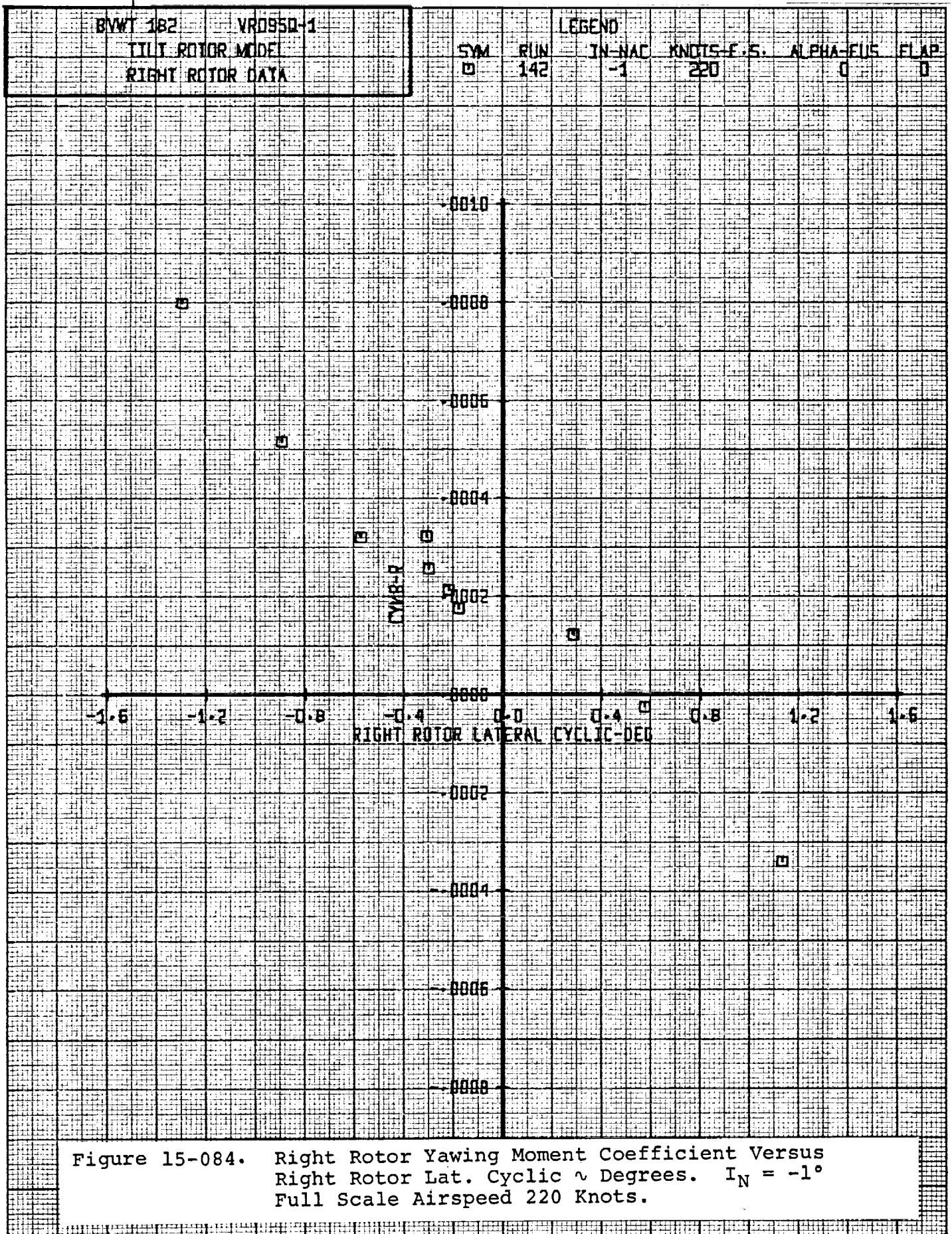


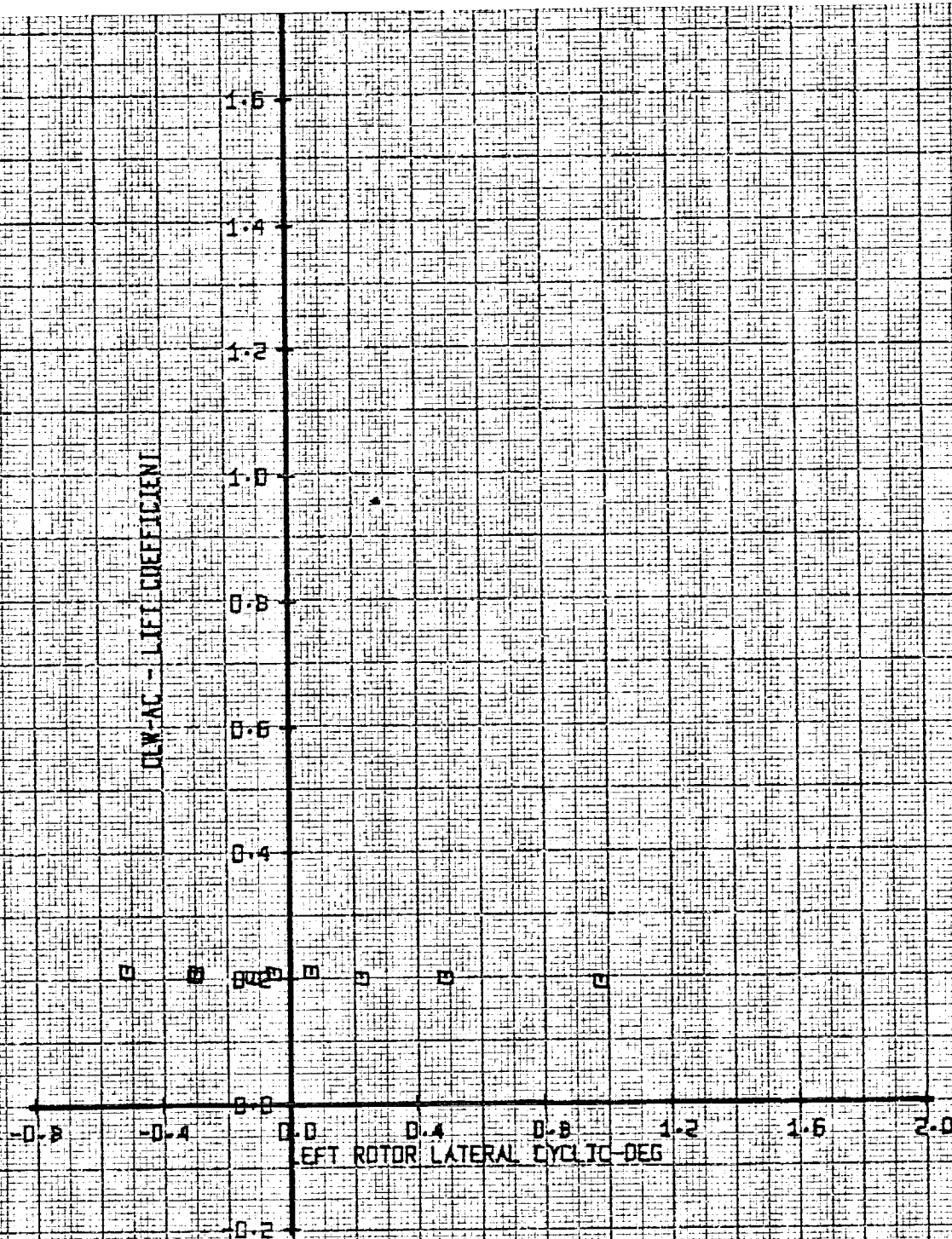
Figure 15-083. Right Rotor Pitching Moment Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$
Full Scale Airspeed 220 Knots.



BVWT 182 VRO950-1
TILT ROTOR MODEL

LEGEND
SYM RUN IN-NAC KNOTS-F-S ALPHA-FUS FLAP
□ 142 -1 220 0 0

Figure 15-085. Aircraft Lift Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



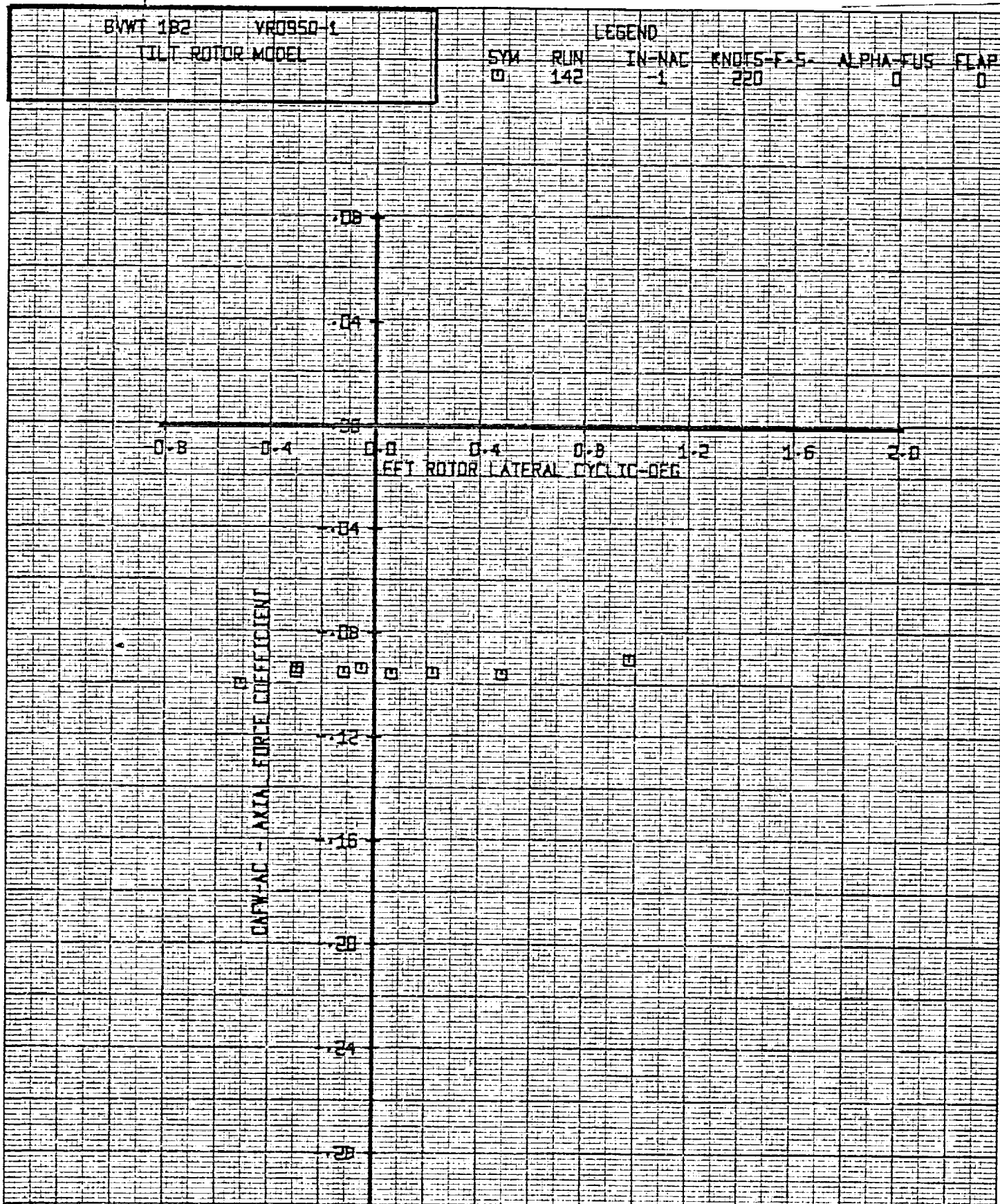
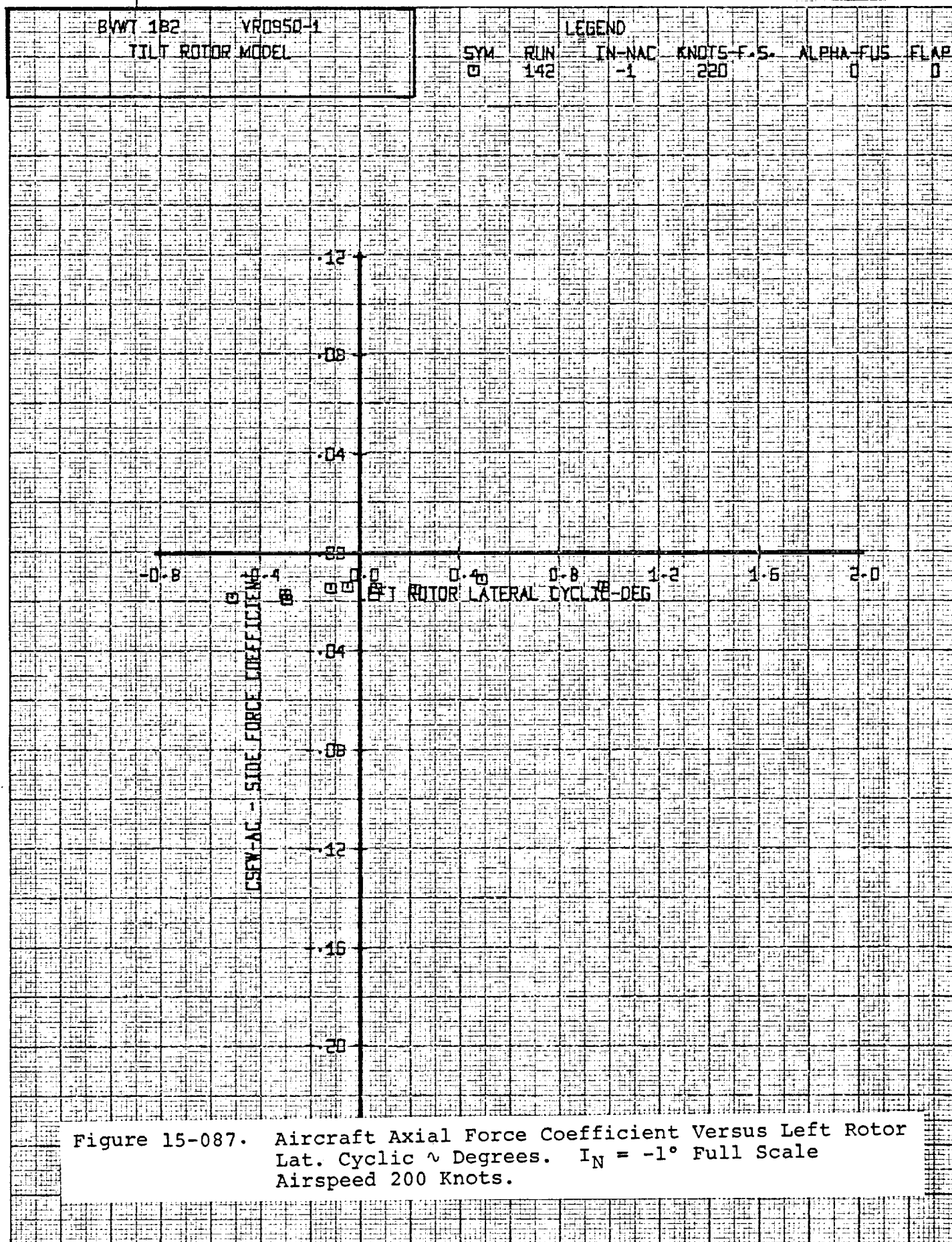


Figure 15-086. Aircraft Side Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



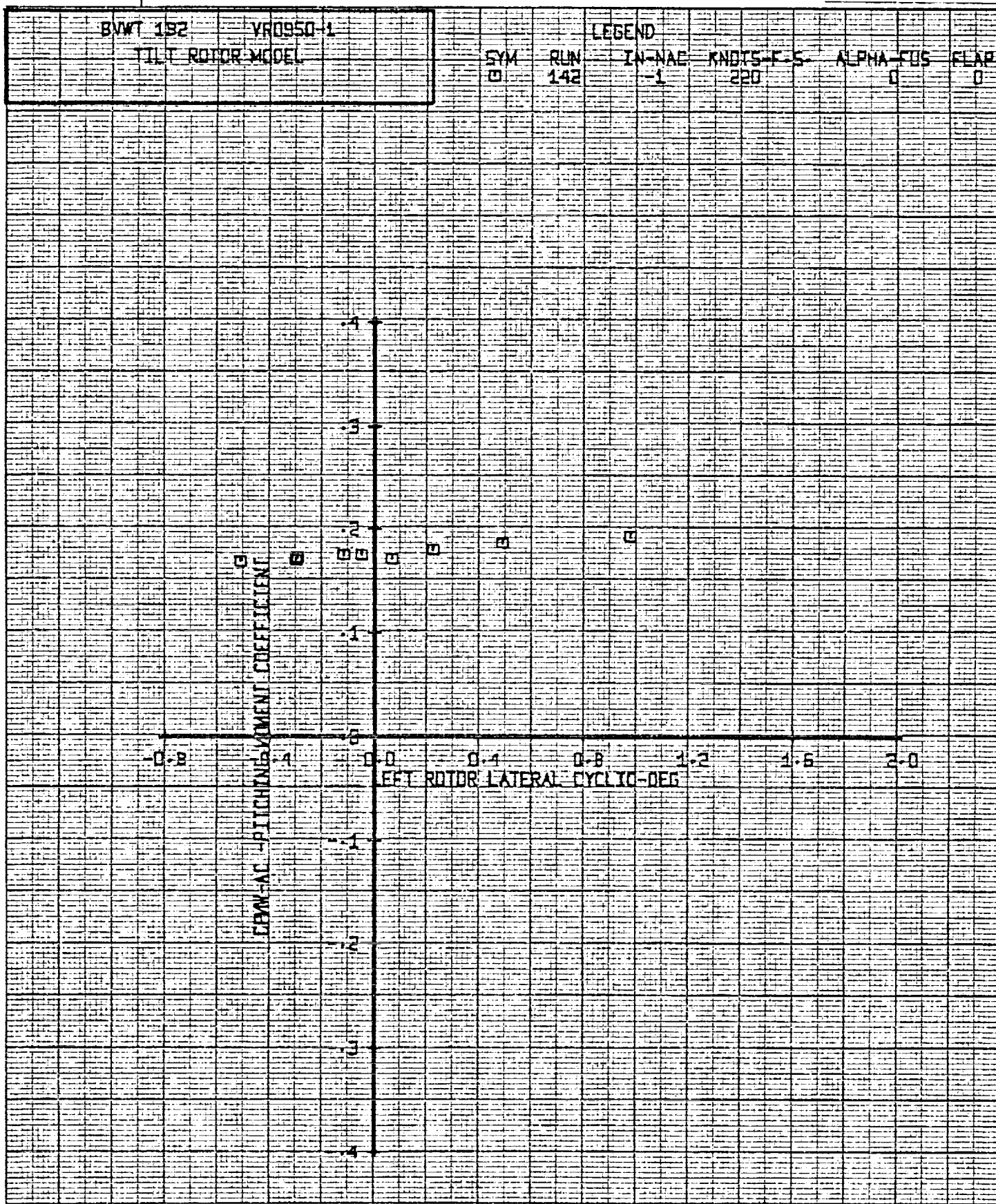


Figure 15-088. Aircraft Pitching Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

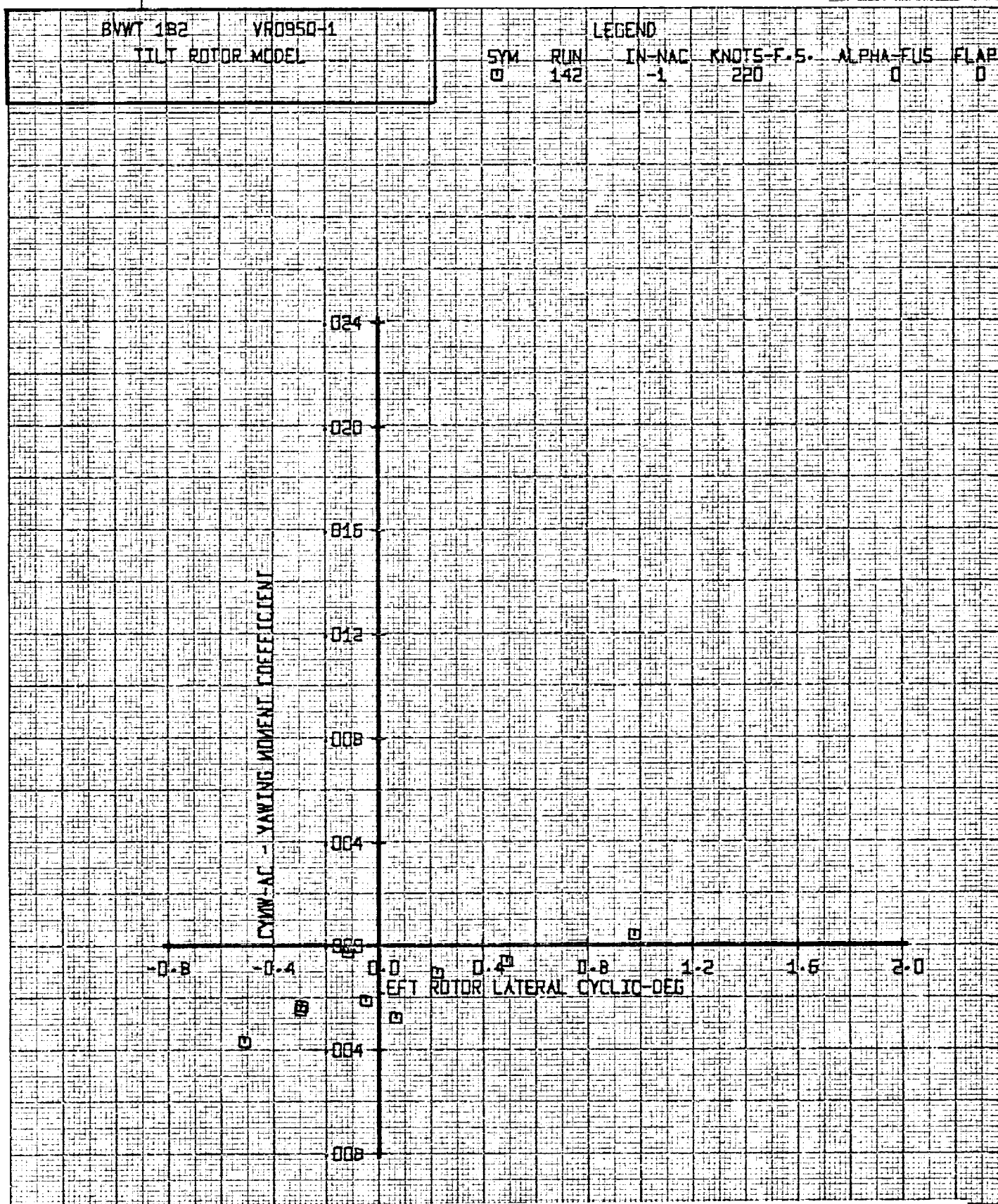


Figure 15-089. Aircraft Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

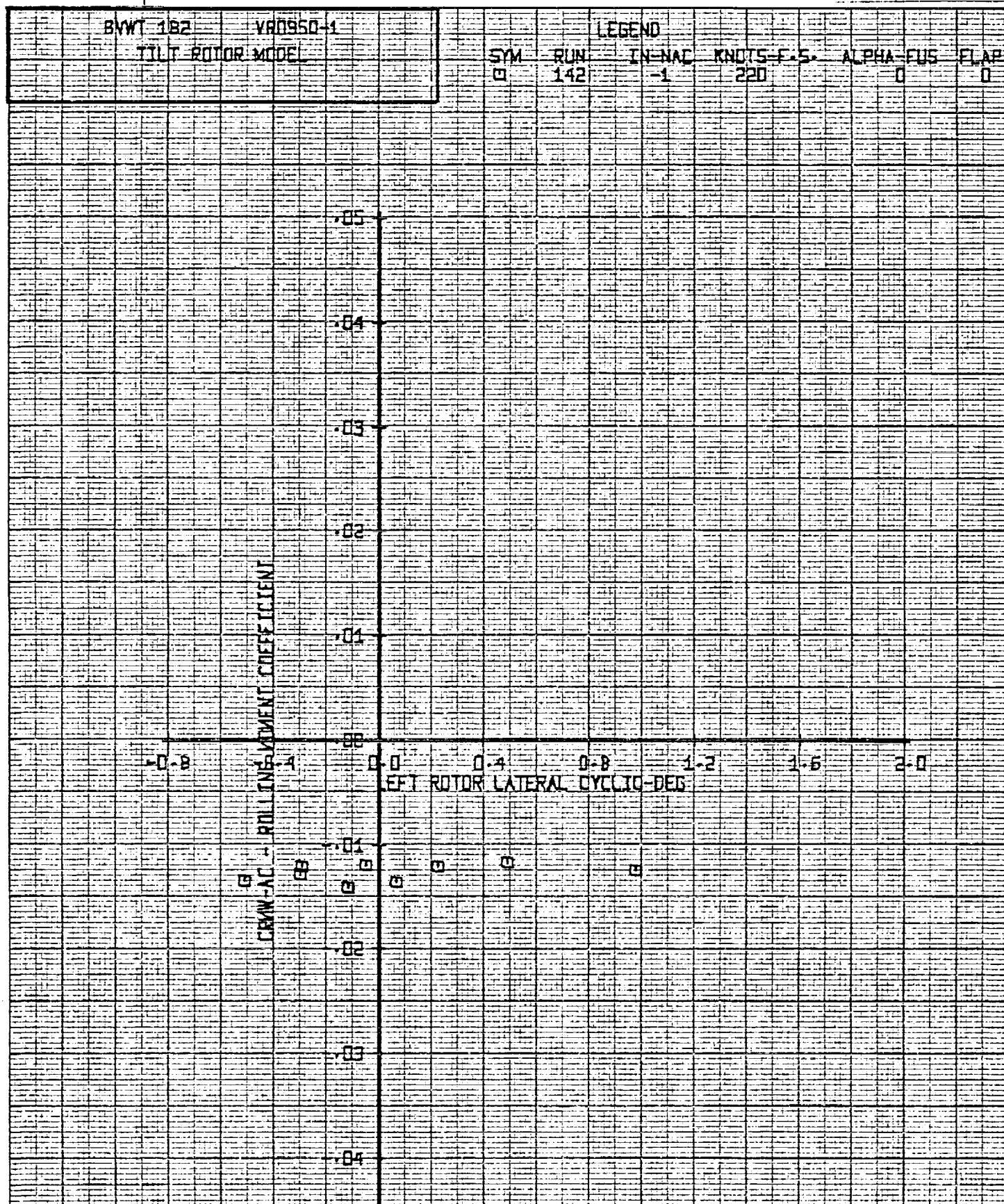


Figure 15-090. Aircraft Rolling Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

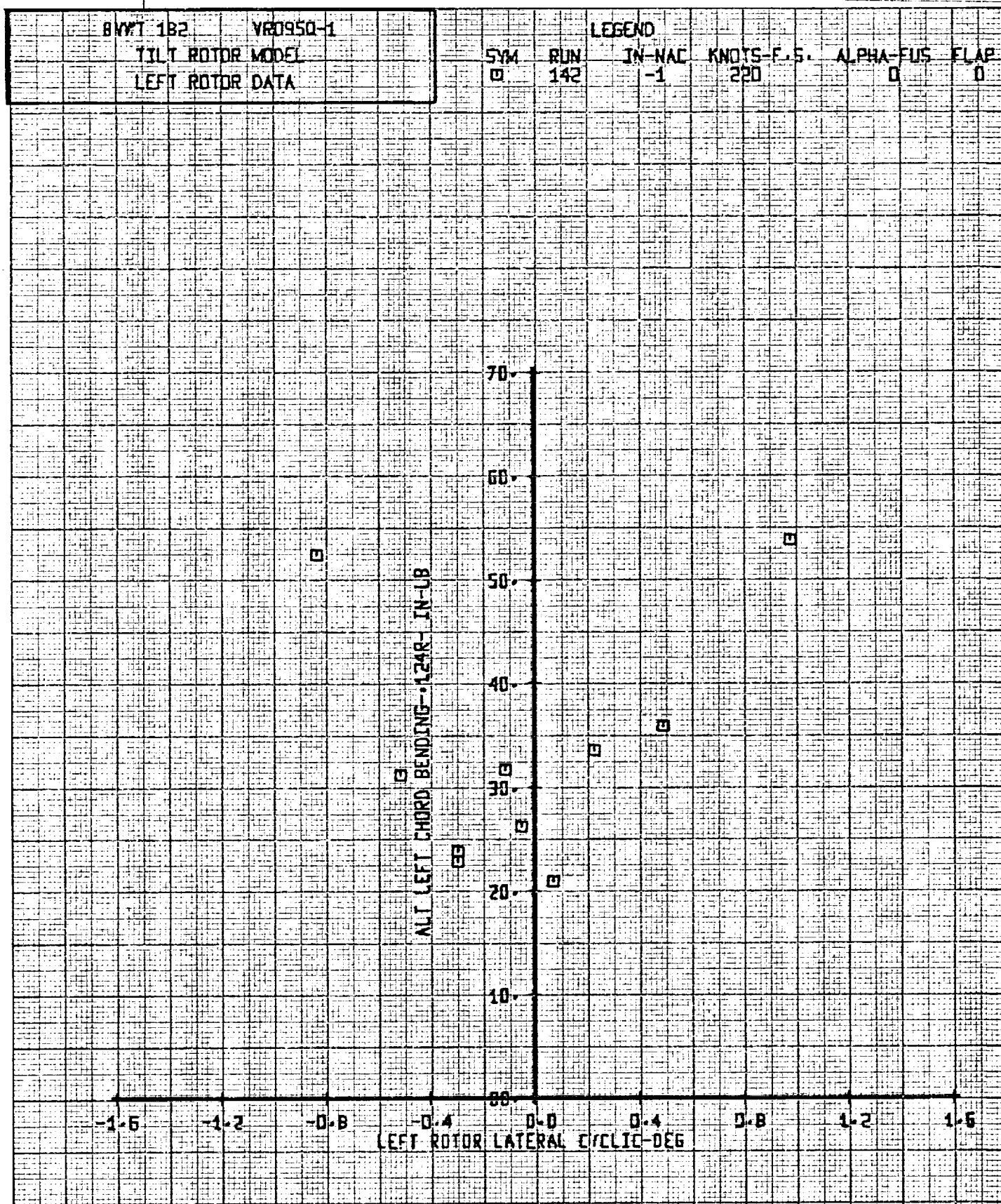


Figure 15-091. Alt. Left Chord Bending Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BVWT 182 YR0950-1

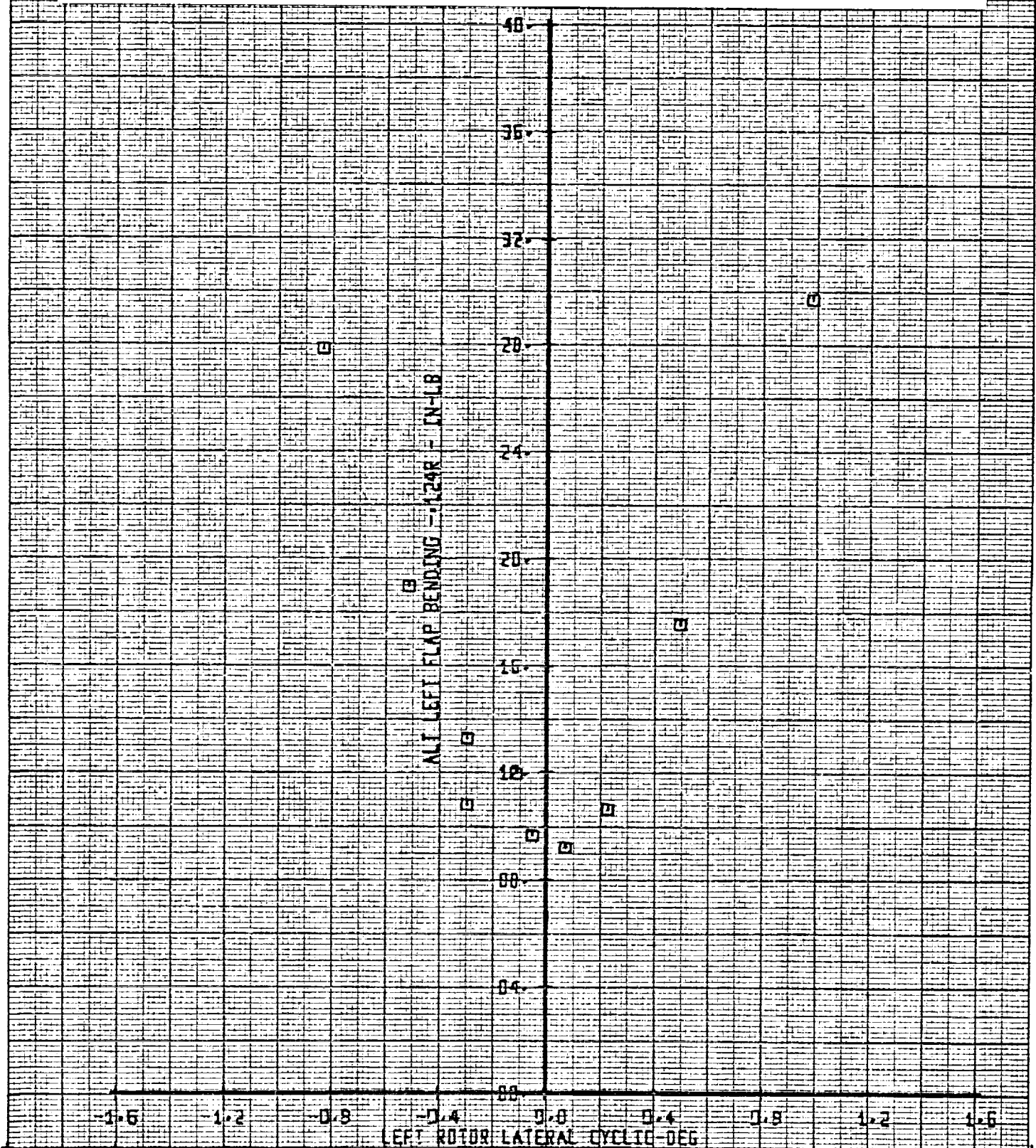
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-E.S.	ALPHA-EUS	FLAP
□	142	-1	220	0	0

Figure 15-092. Alt. Left Flap Bending Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



3/0

SET 94
BVWT 182

BVWT 182 VR095D-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

142

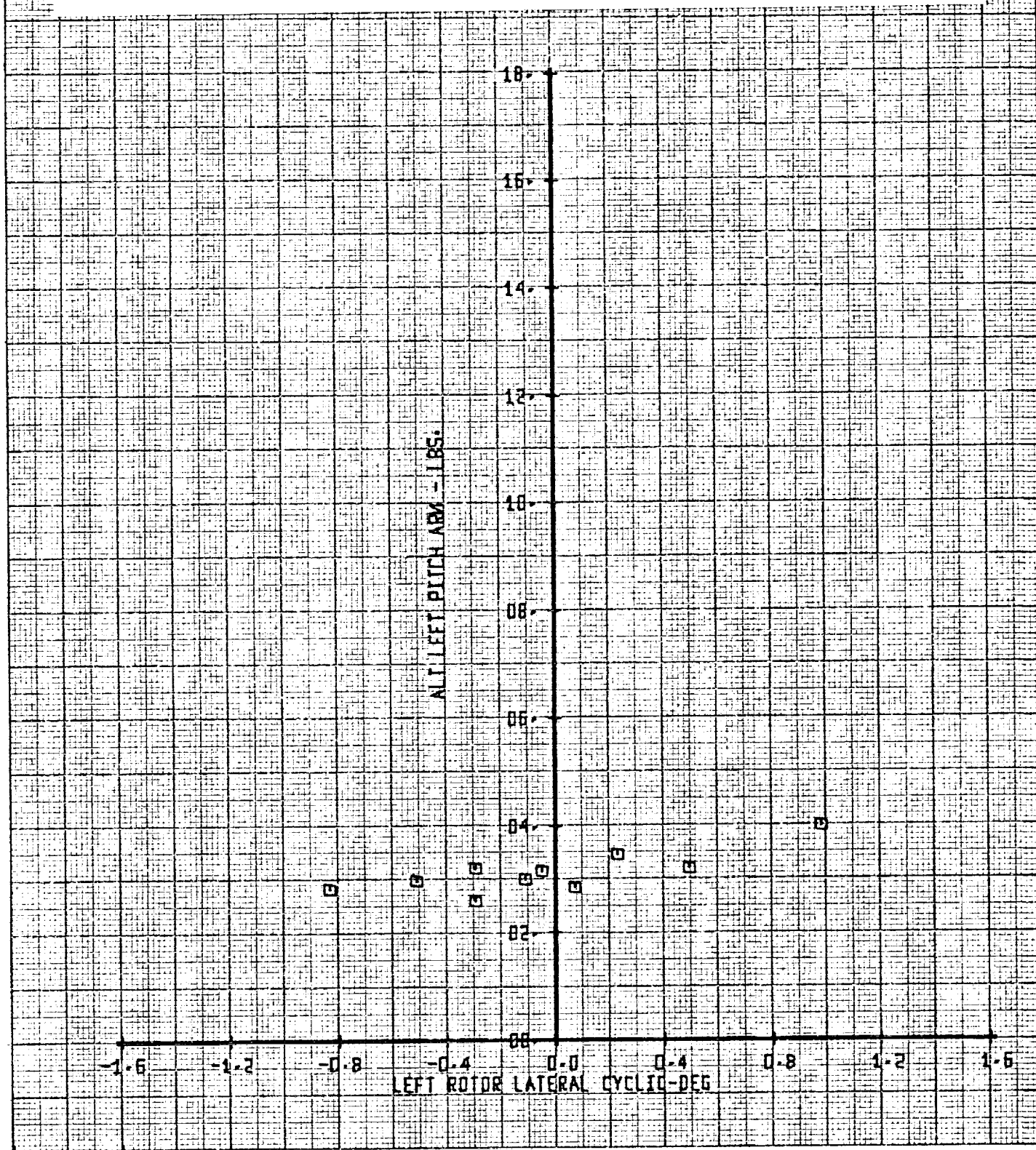
-1

220

0

0

Figure 15-093. Alt. Left Pitch Link Load Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



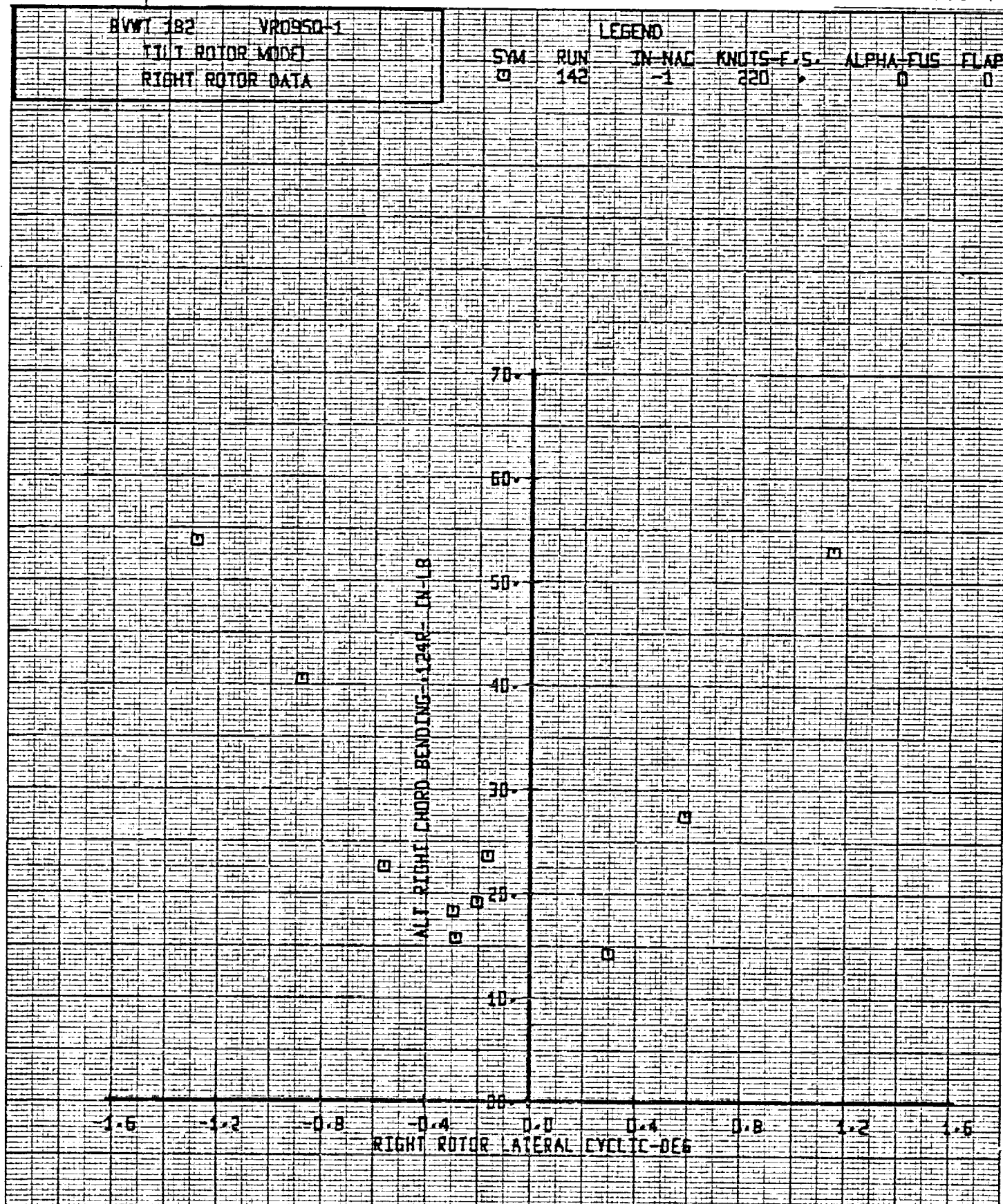
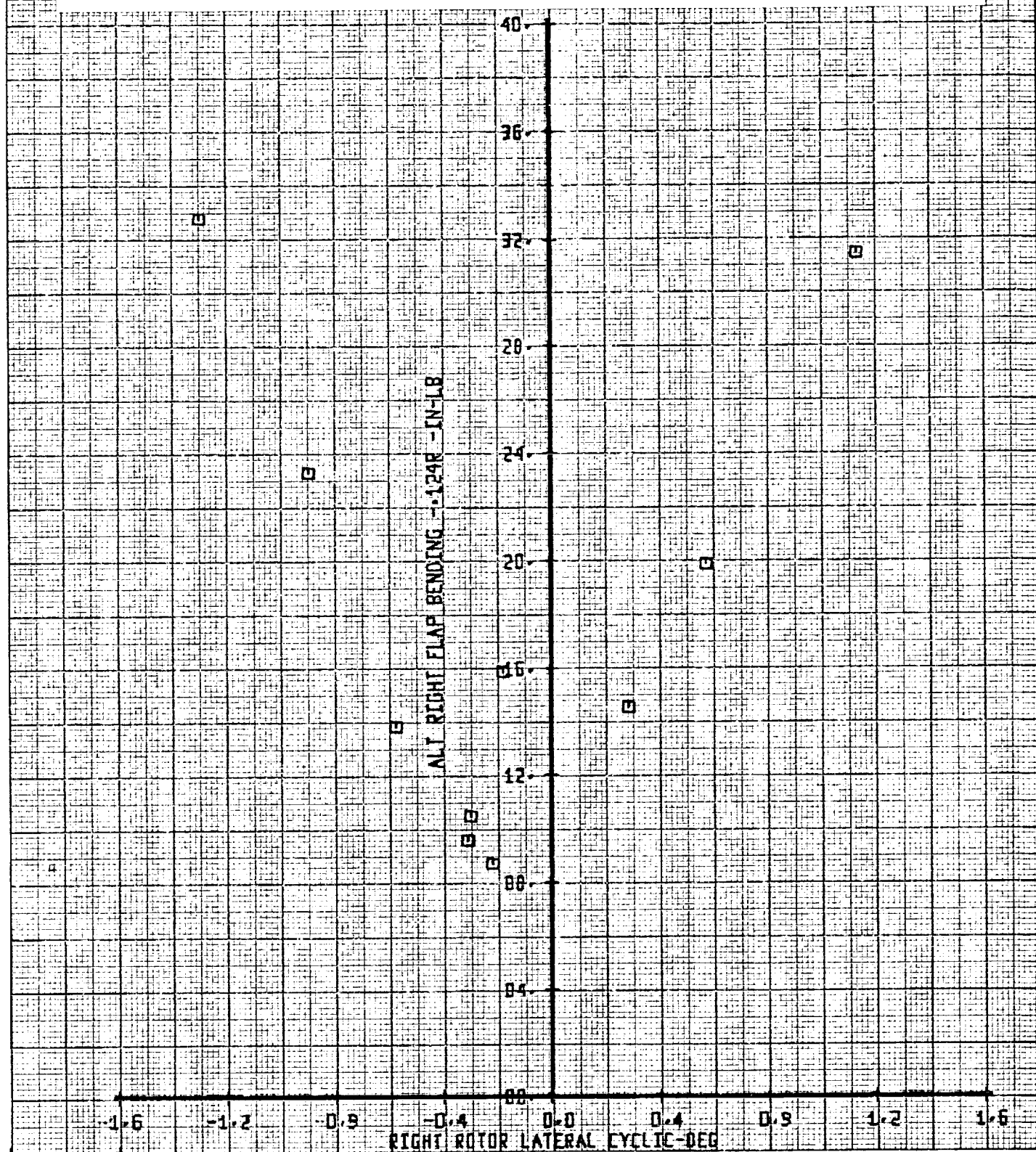


Figure 15-094. Alt. Right Chord Bending Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

BVWT 182 VR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 142 -1 220 0 0

Figure 15-095. Alt. Right Flap Bending Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



BVWT 182 VR0950-1

TILT ROTOR MODE

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

0

142

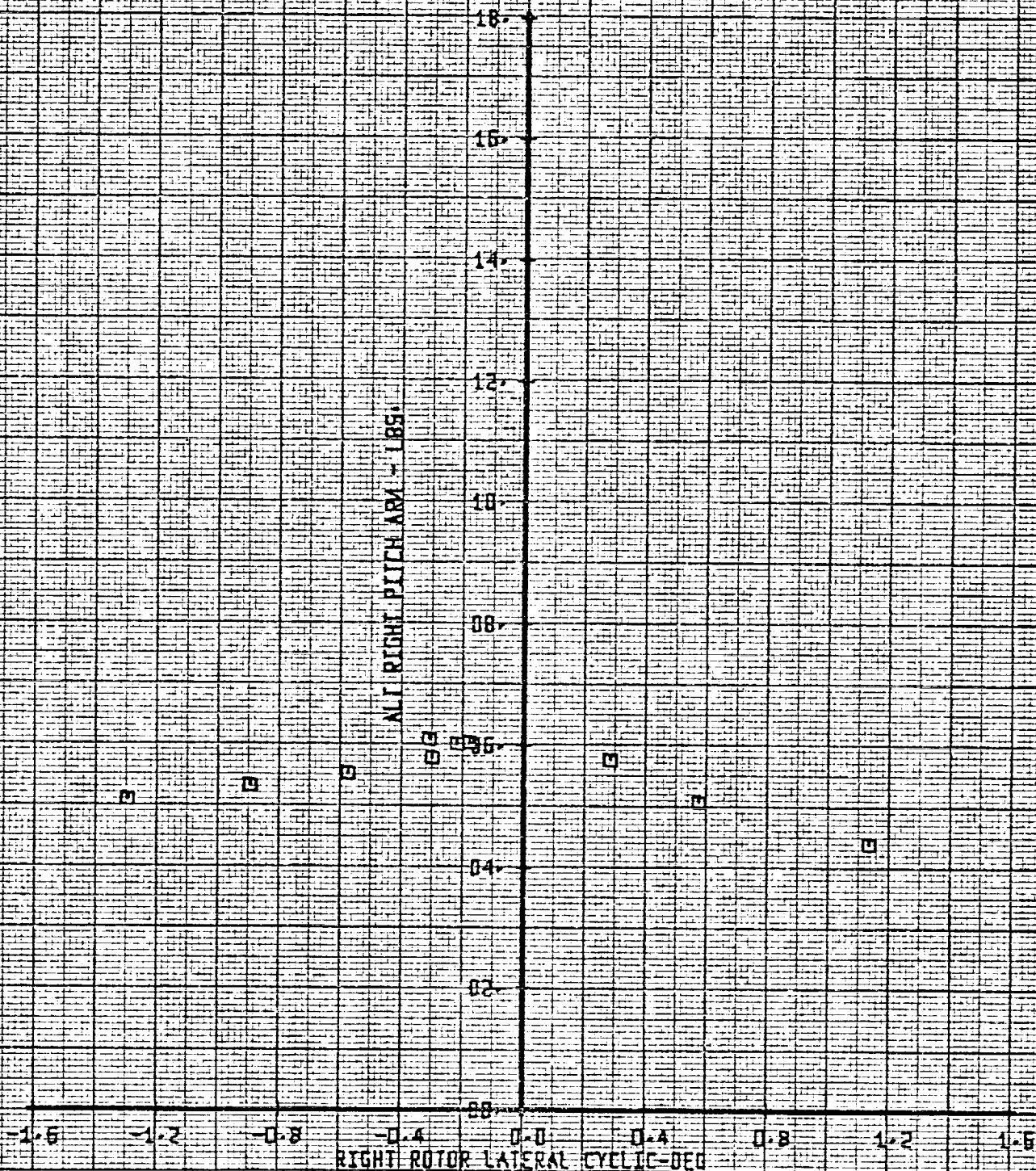
-1

220

0

0

Figure 15-096. Alt. Right Pitch Link Load Versus Right Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.



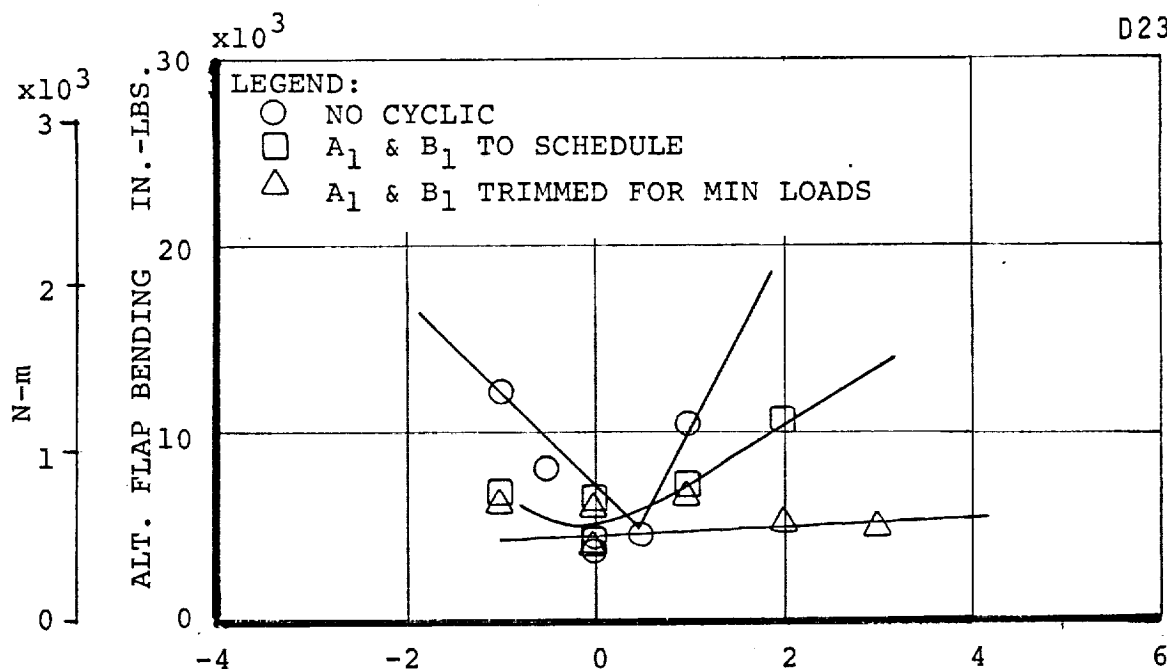


Figure 15-098. Alt. Left Rotor Blade Flap Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

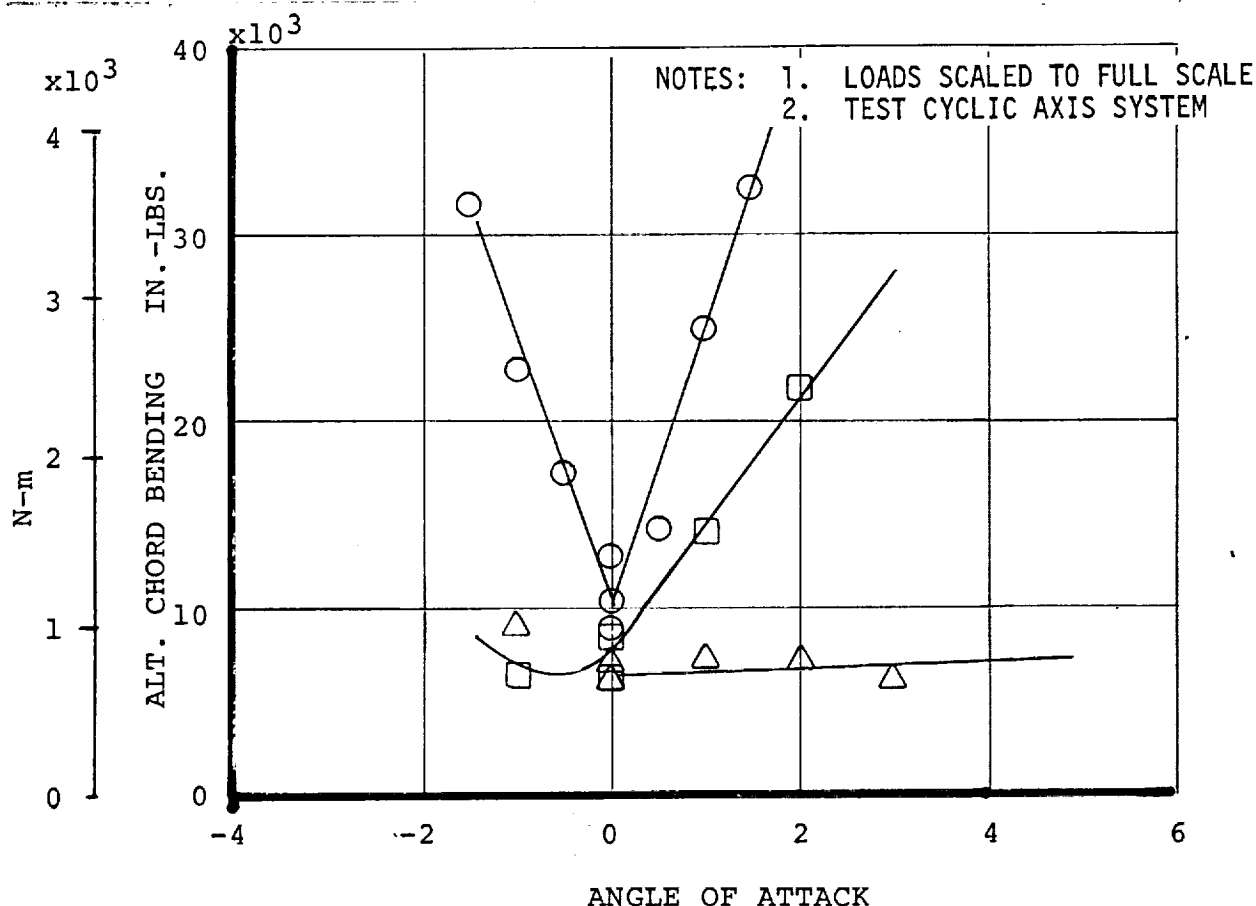


Figure 15-097. Alt. Left Rotor Blade Chord Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

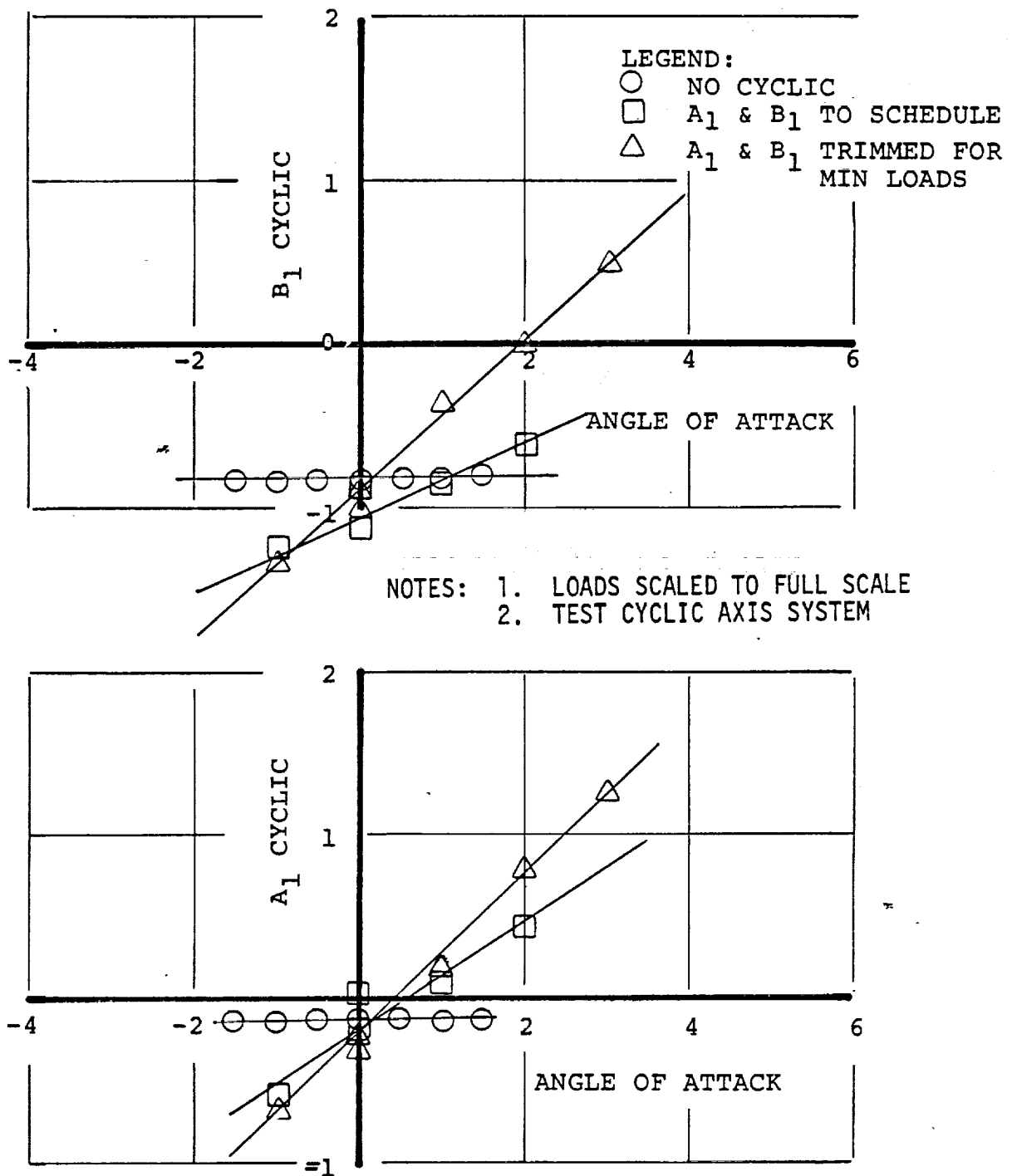


Figure 15-099. Left Rotor Cyclic Schedules. $I_N = -1^\circ$ Full Scale
Airspeed 220 Knots.

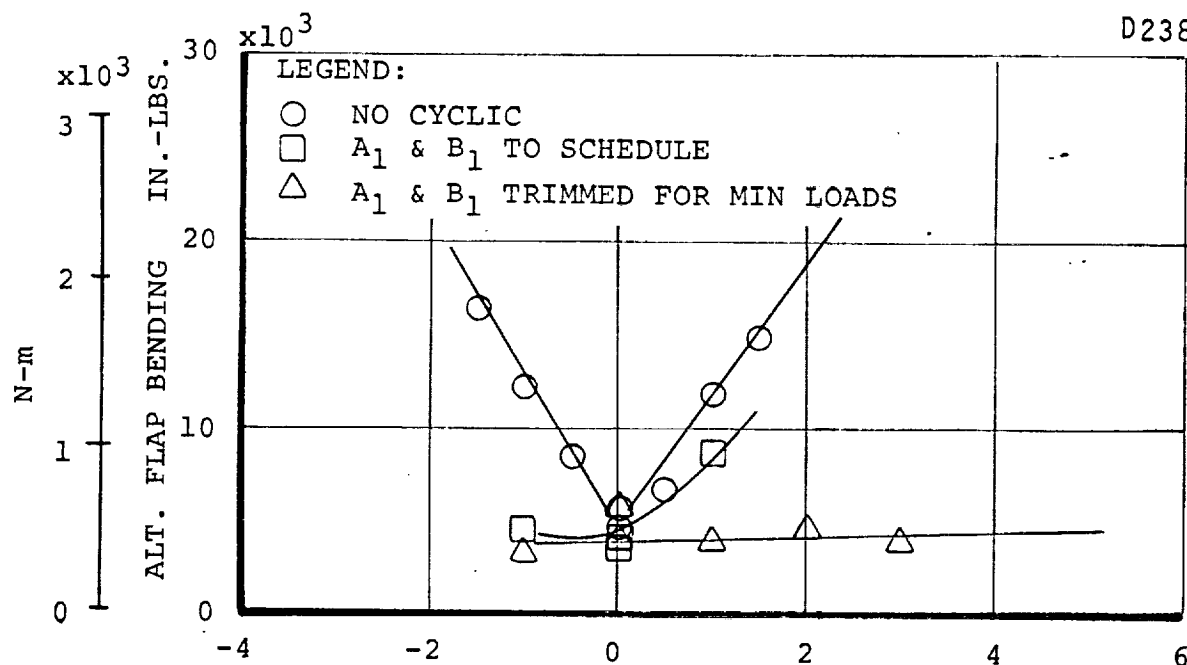


Figure 15-101. Alt. Right Rotor Blade Flap Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

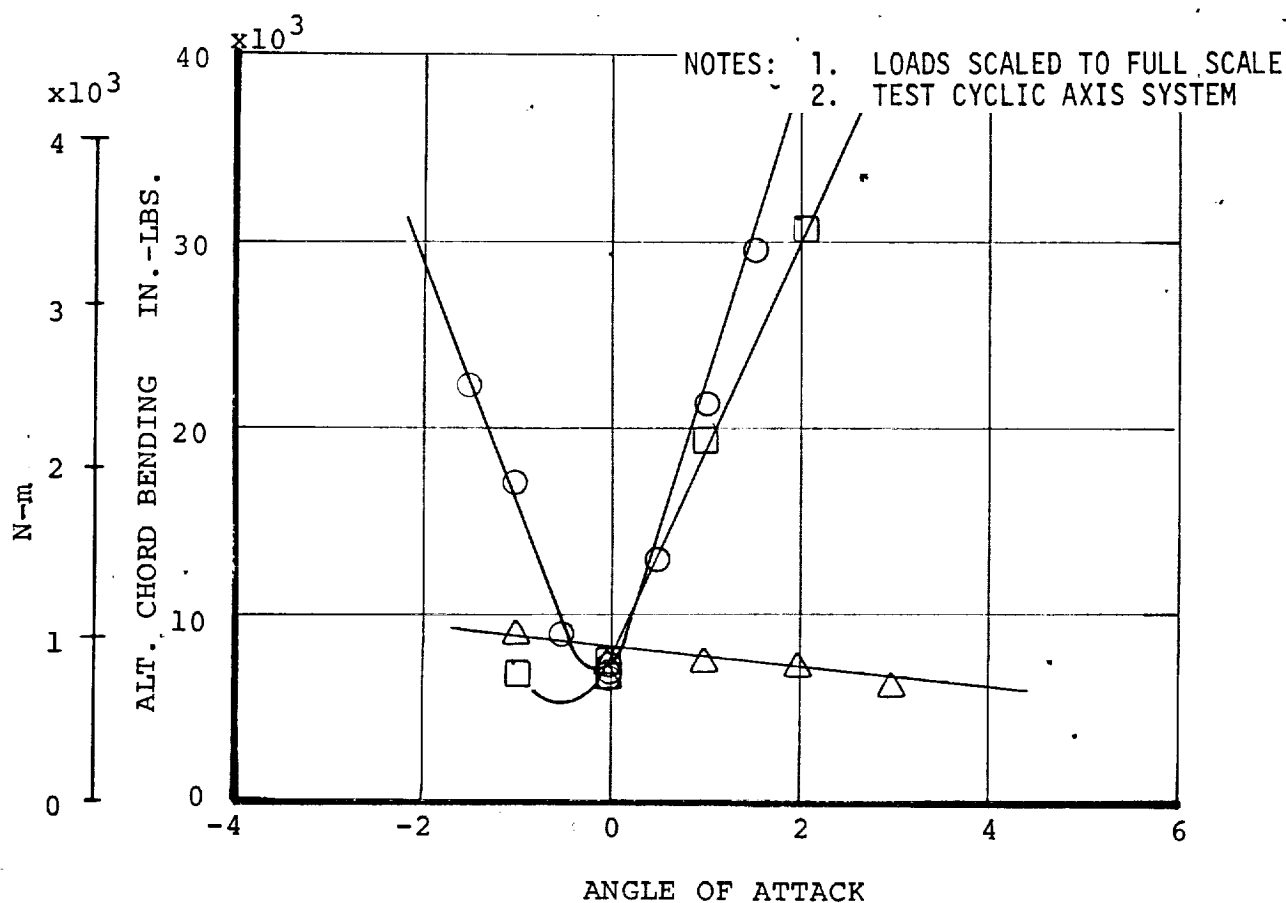


Figure 15-100. Alt. Right Rotor Blade Chord Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 220 Knots.

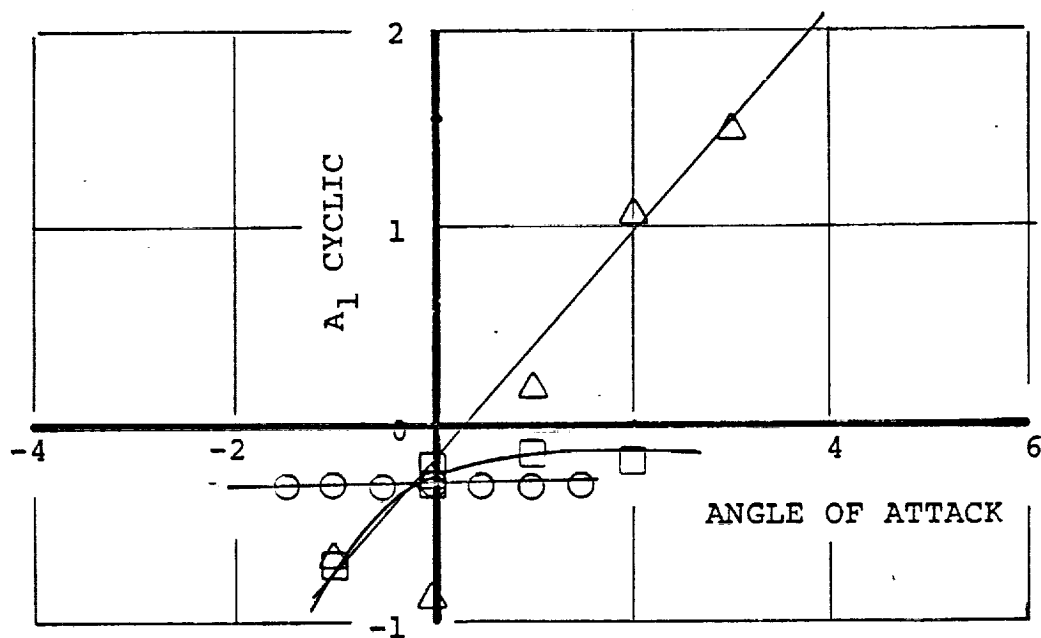
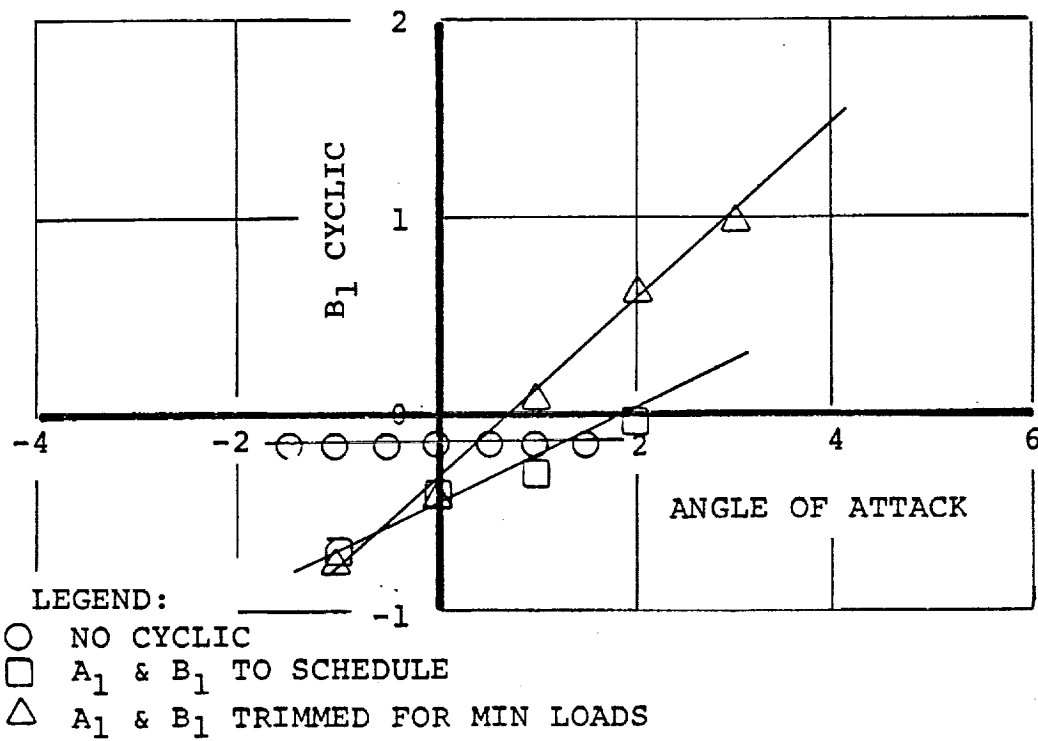


Figure 15-102. Right Rotor Cyclic Schedules. $I_N = -1^\circ$ Full Scale
Airspeed 220 Knots.

$$I_N = -10 \text{ V}_{FS} = 260 \text{ KTS.}$$

BVWT 182 VR0950-1

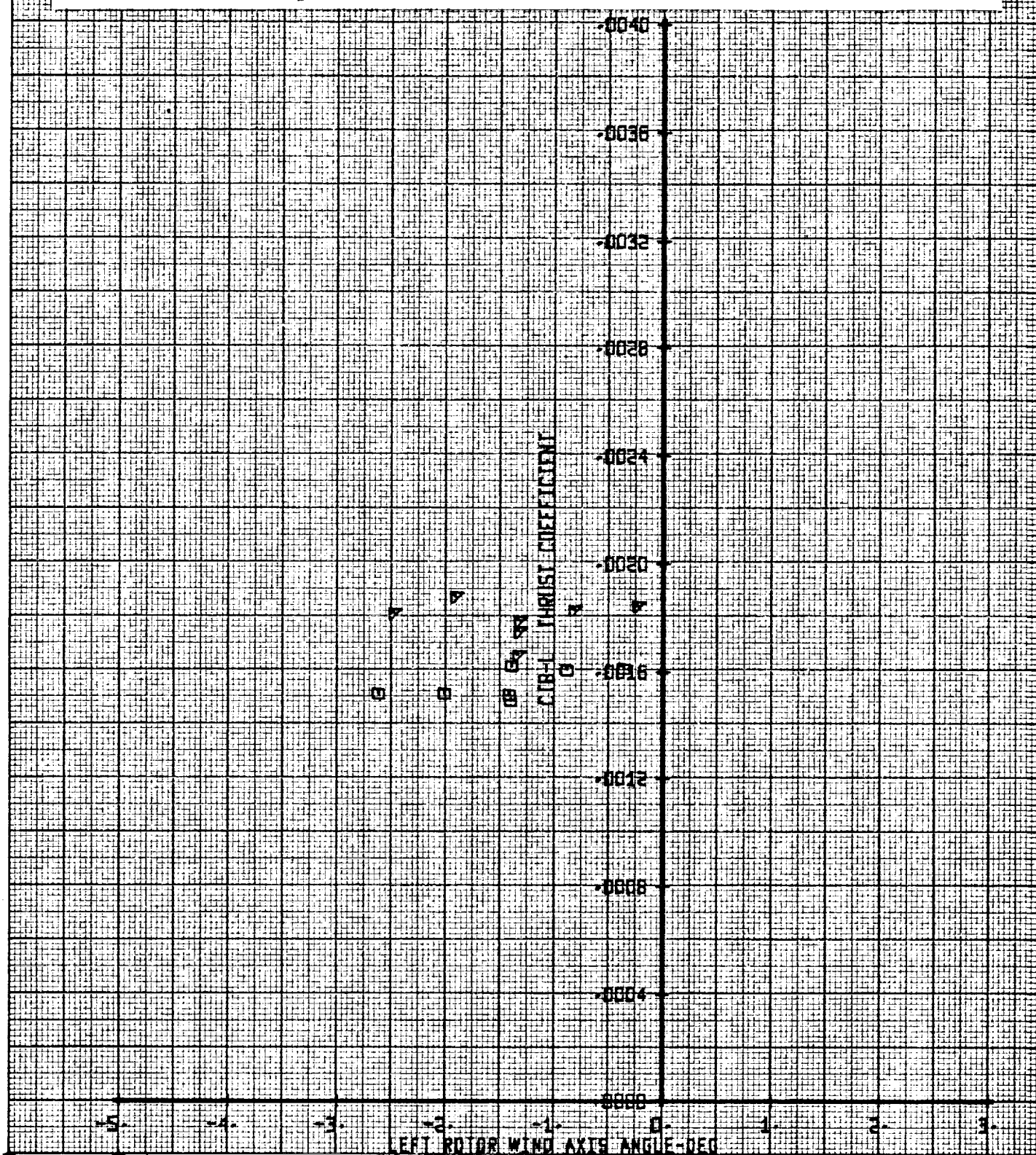
TILT ROTOR MODEL

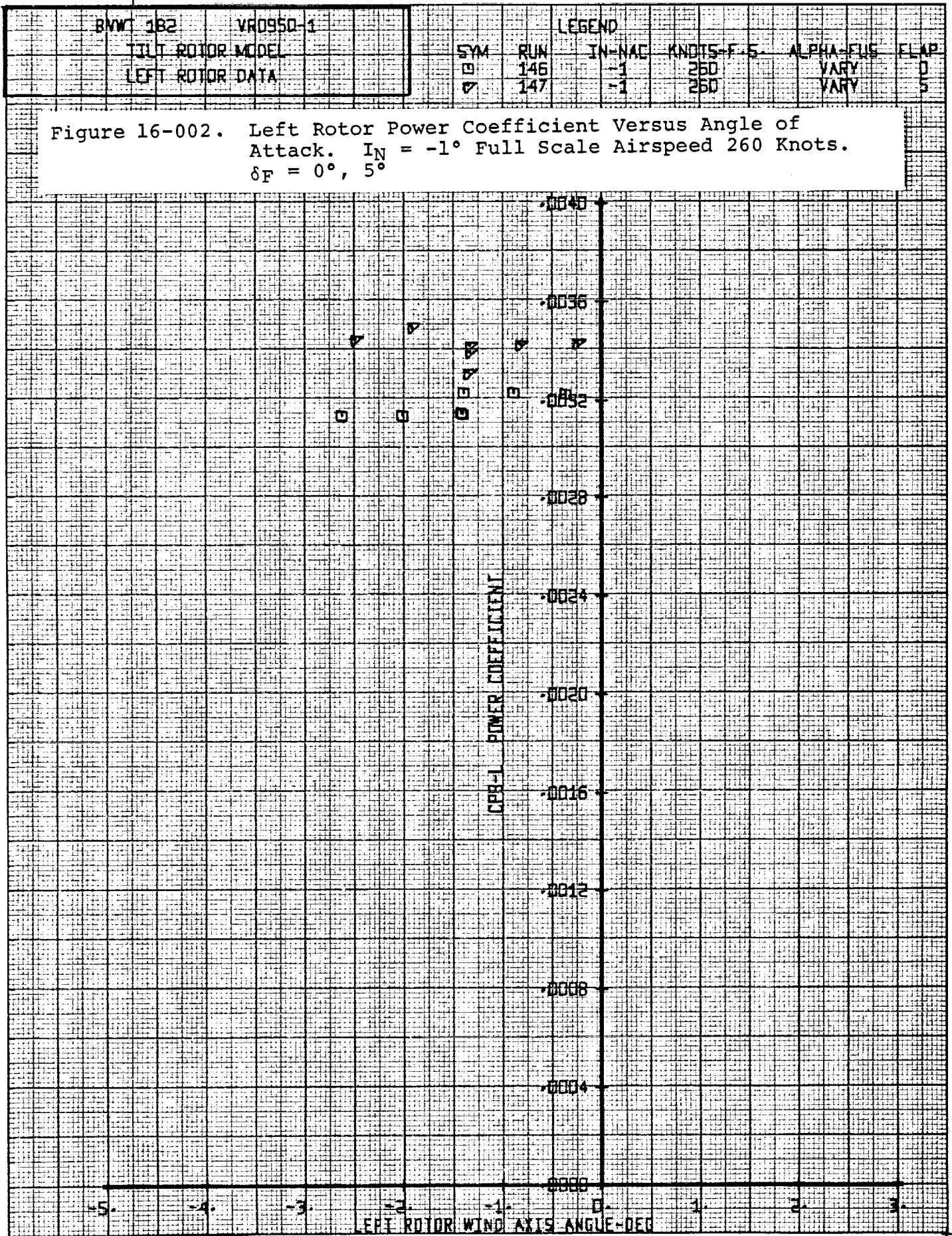
LEFT ROTOR DATA

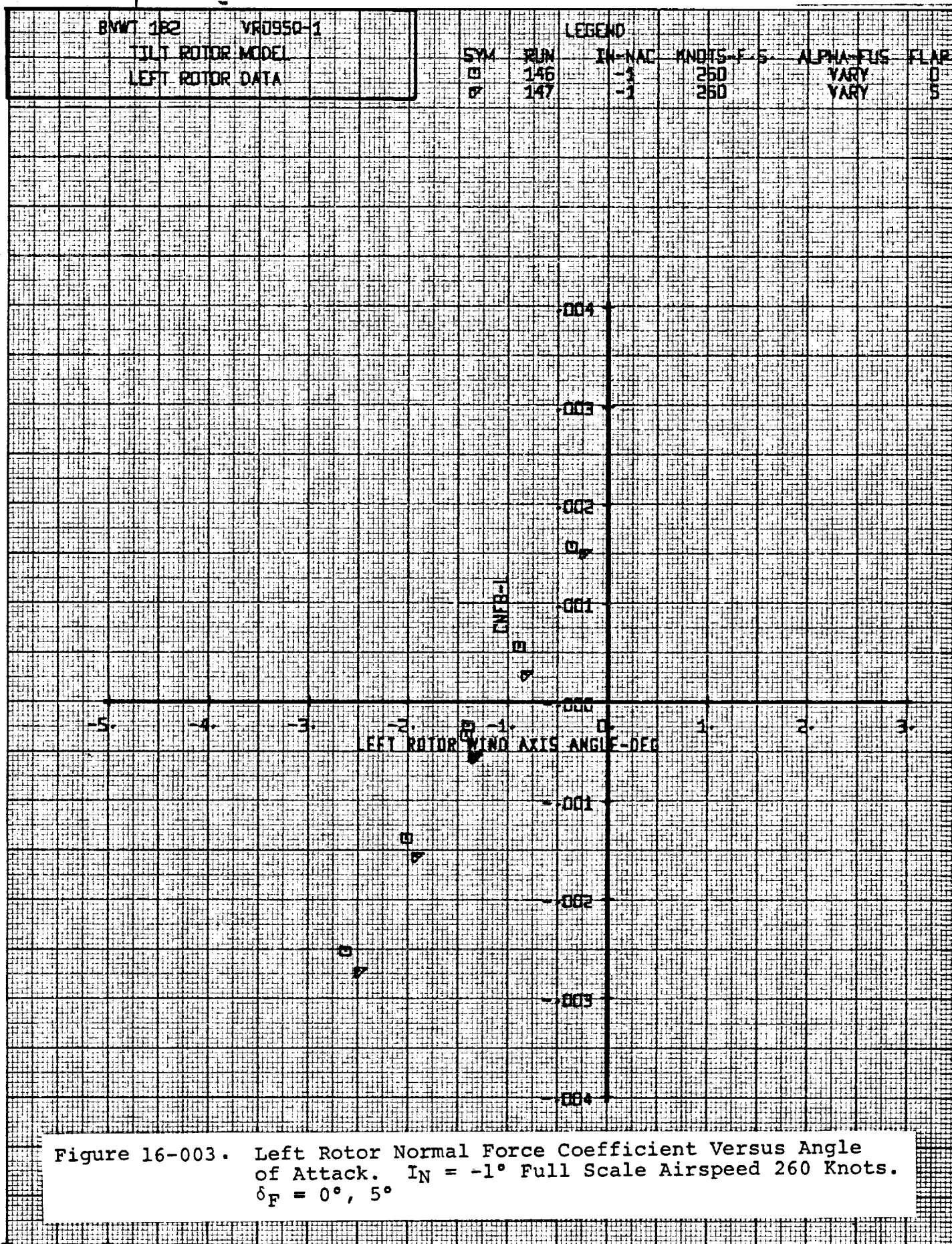
LEGEND

SYM	RUN	IN-NAC	KNOTS-F-S	ALPHA-FUS	FLAP
□	146	-1	260	VARY	0
▽	147	-1	260	VARY	5

Figure 16-001. Left Rotor Thrust Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$







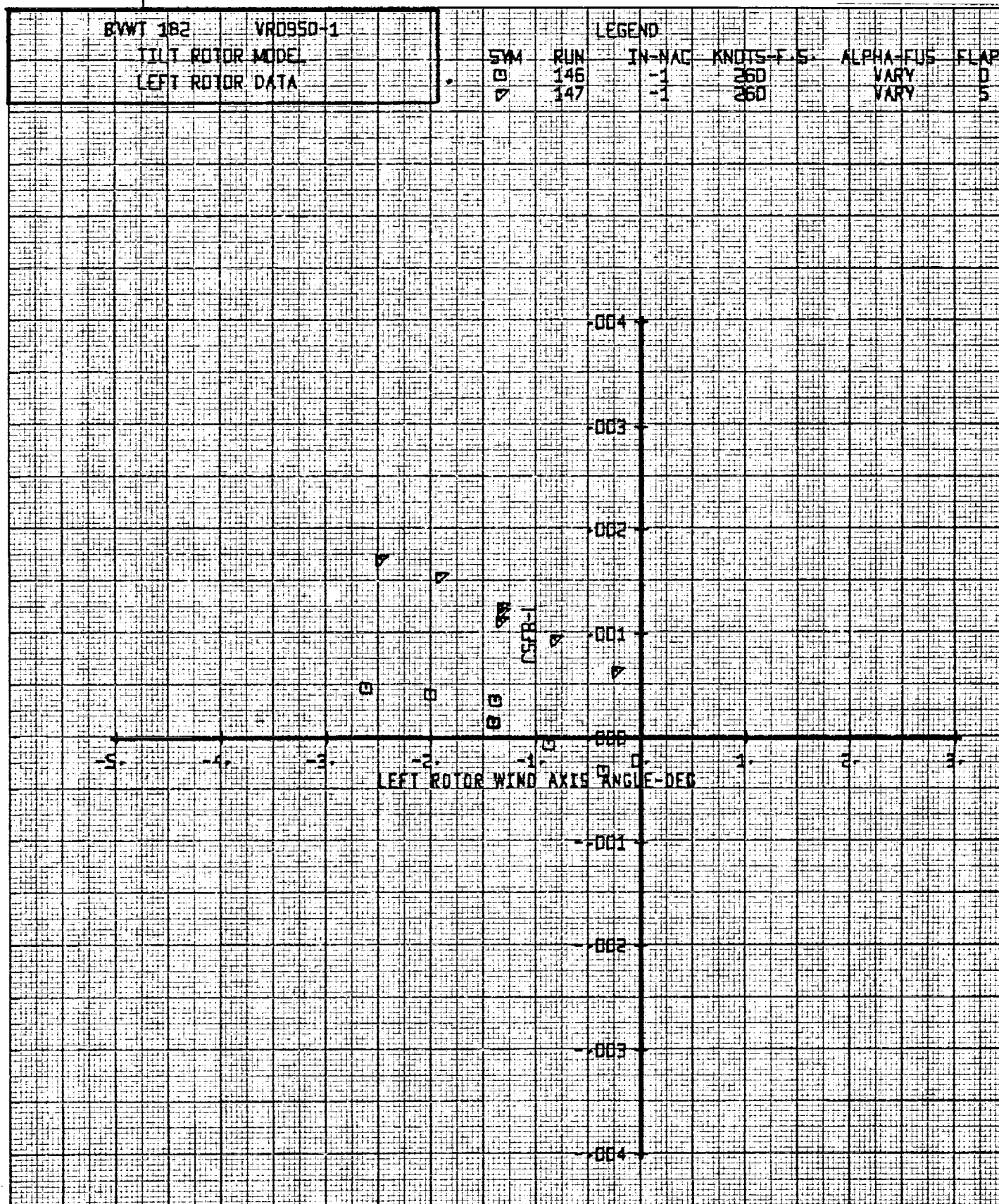
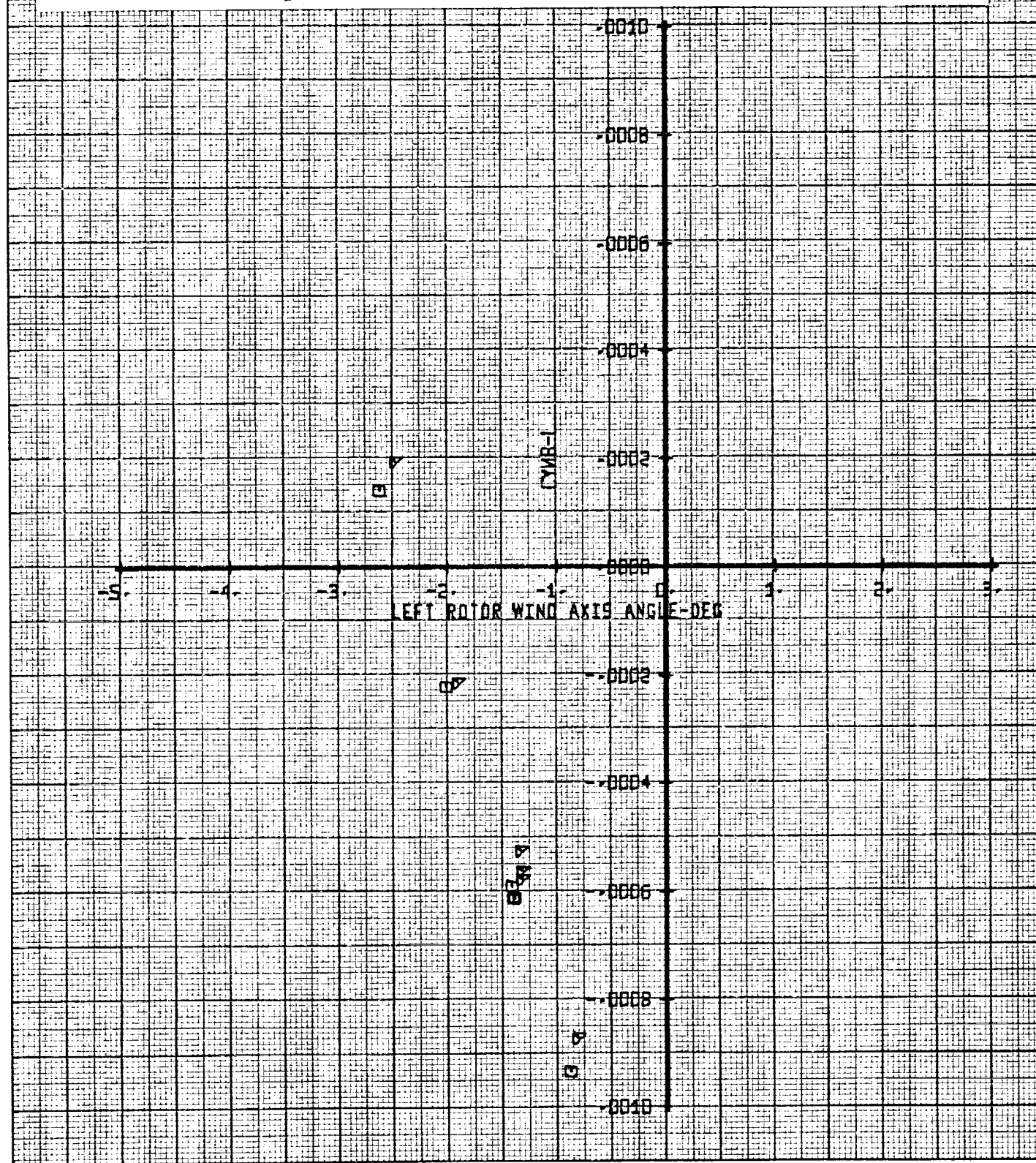


Figure 16-004. Left Rotor Side Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta F = 0^\circ, 5^\circ$

BYW 182		VR0950-1		LEGEND				
TILT ROTOR MODEL		40M	RUN	IN-NAE	KNOTS-F.S.	ALPHA-FUS	FLAP	
LEFT ROTOR DATA		146	146	146	260	VARY	0	
		147	147	147	260	VARY	5	

Figure 16-006. Left Rotor Yawing Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$



BVWT 182 VR0950-1

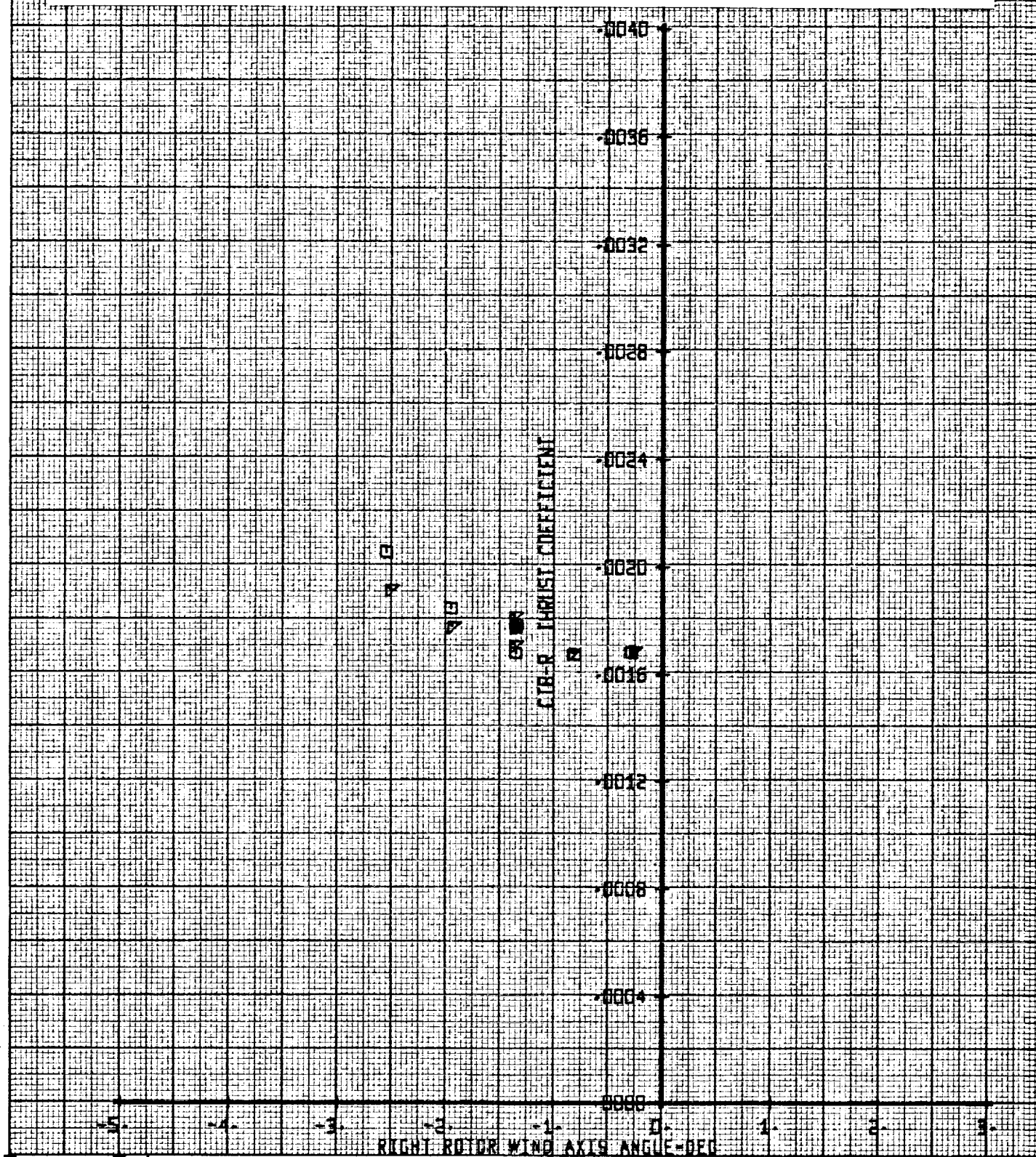
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F-5	ALPHA-FUS	FLAP
□	146	-1	250	VARY	0
▽	147	-1	250	VARY	5

Figure 16-007. Right Rotor Thrust Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$



325

SET 98
BVWT 182

BMW 182 VR0950-1

TILT ROTOR MODE

RIGHT ROTOR DATA

LEGEND

SYM

RLIN

IN-NAC

KNDTS-F.S

ALPHA-FUS

FLAP

2

146
147

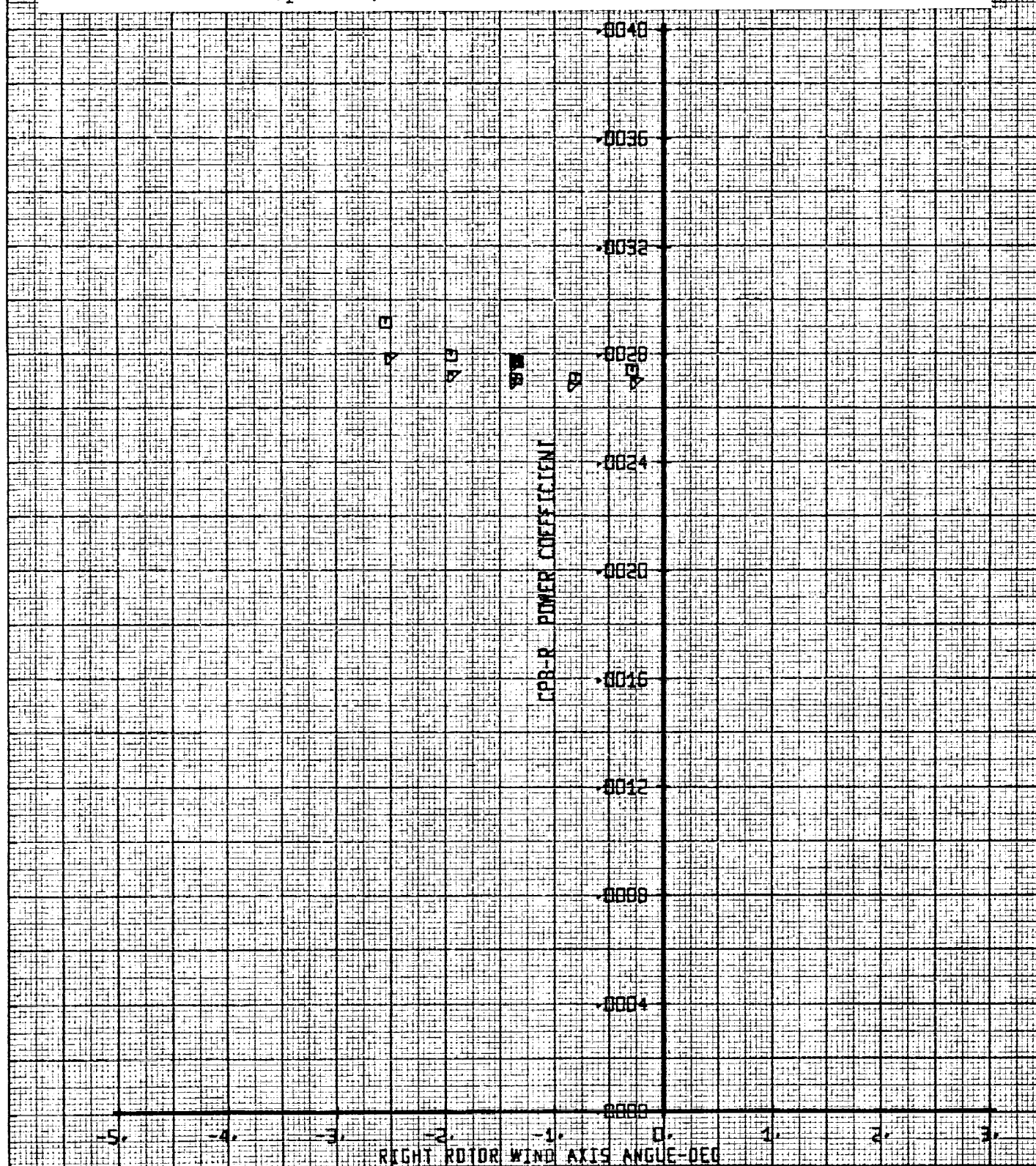


260
260

VARY
VARY

10

Figure 16-008. Right Rotor Power Coefficient Versus Angle of Attack. $\text{IN} = -1^\circ$ Full Scale Airspeed 260 Knots. $\delta_F = 0^\circ, 5^\circ$



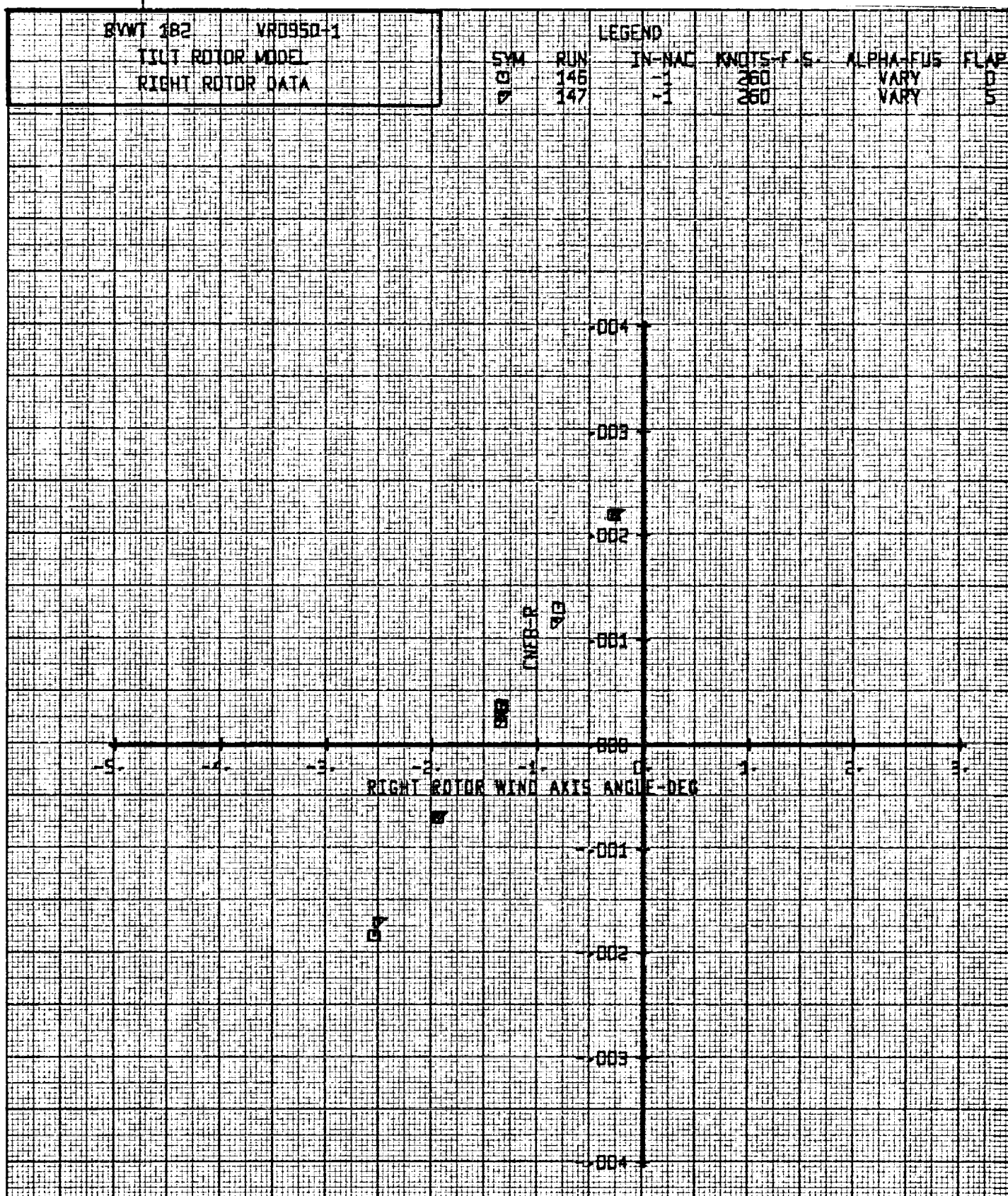


Figure 16-009. Right Rotor Normal Force Coefficient Versus Angle of Attack. $IN = -1^\circ$ Full Scale Airspeed 260 Knots. $\delta F = 0^\circ, 5^\circ$

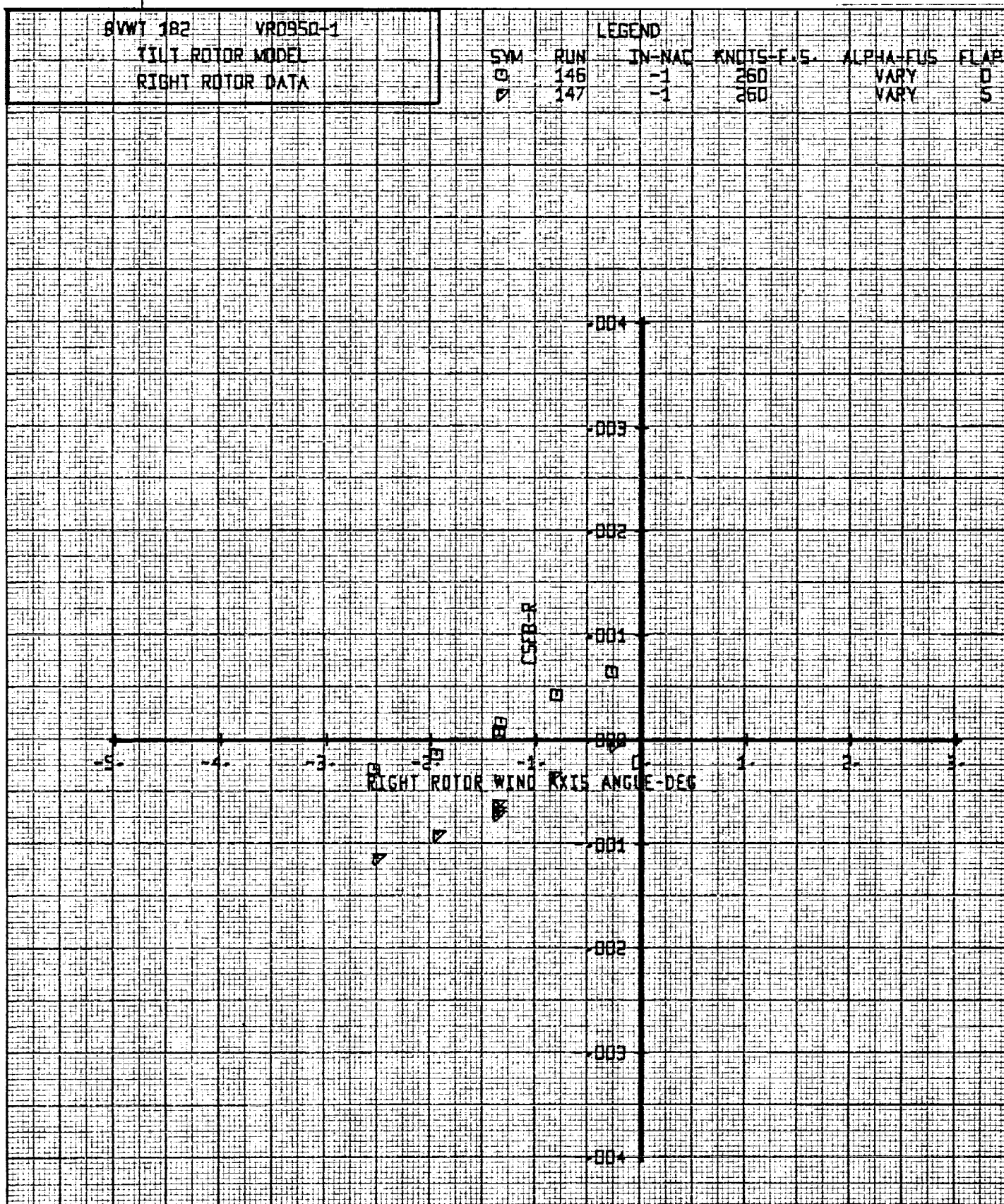


Figure 16-010. Right Rotor Side Force Coefficient Versus Angle of Attack. IN = -1° Full Scale Airspeed 260 Knots. $\delta F = 0^\circ, 5^\circ$

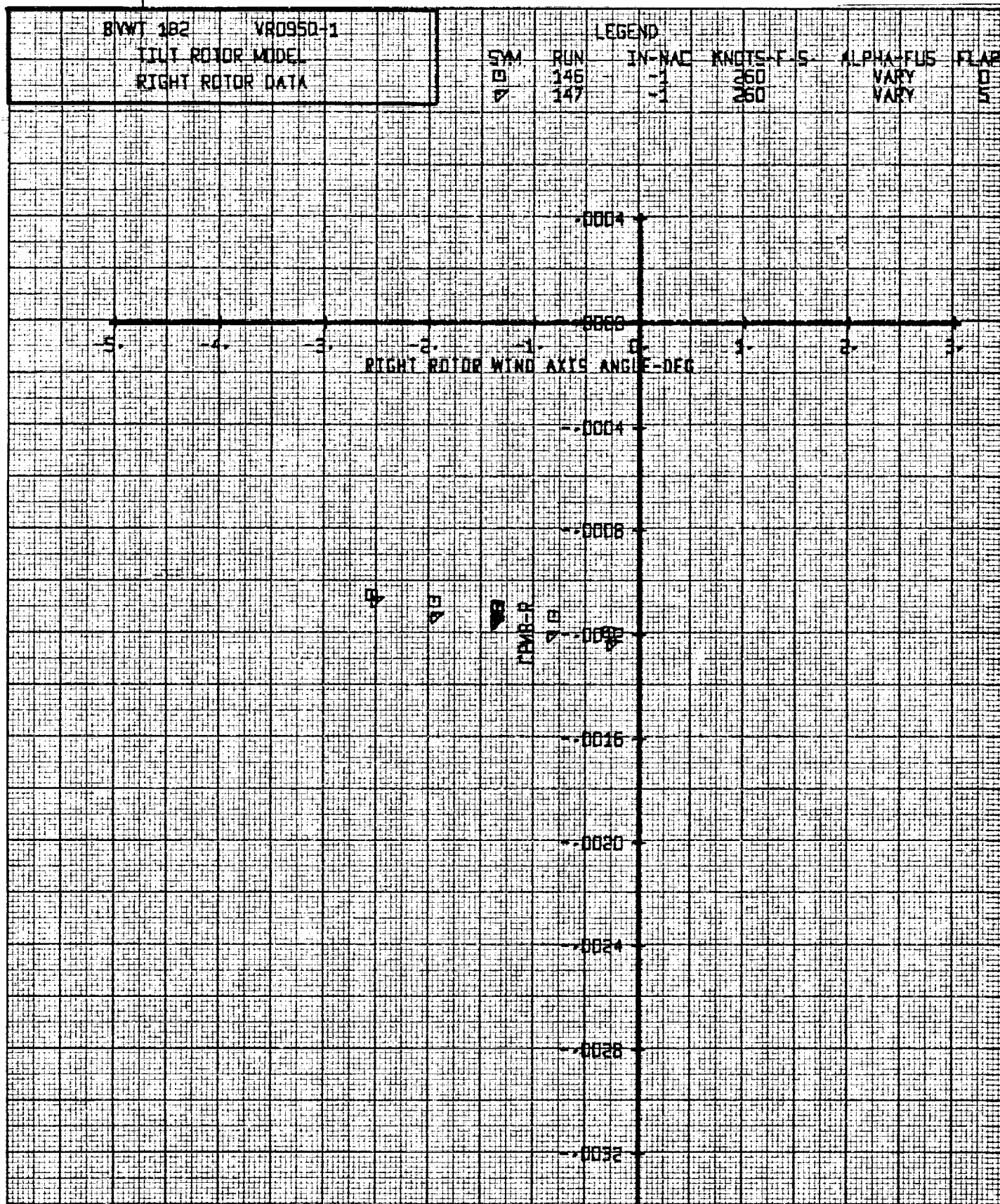


Figure 16-011. Right Rotor Pitching Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$

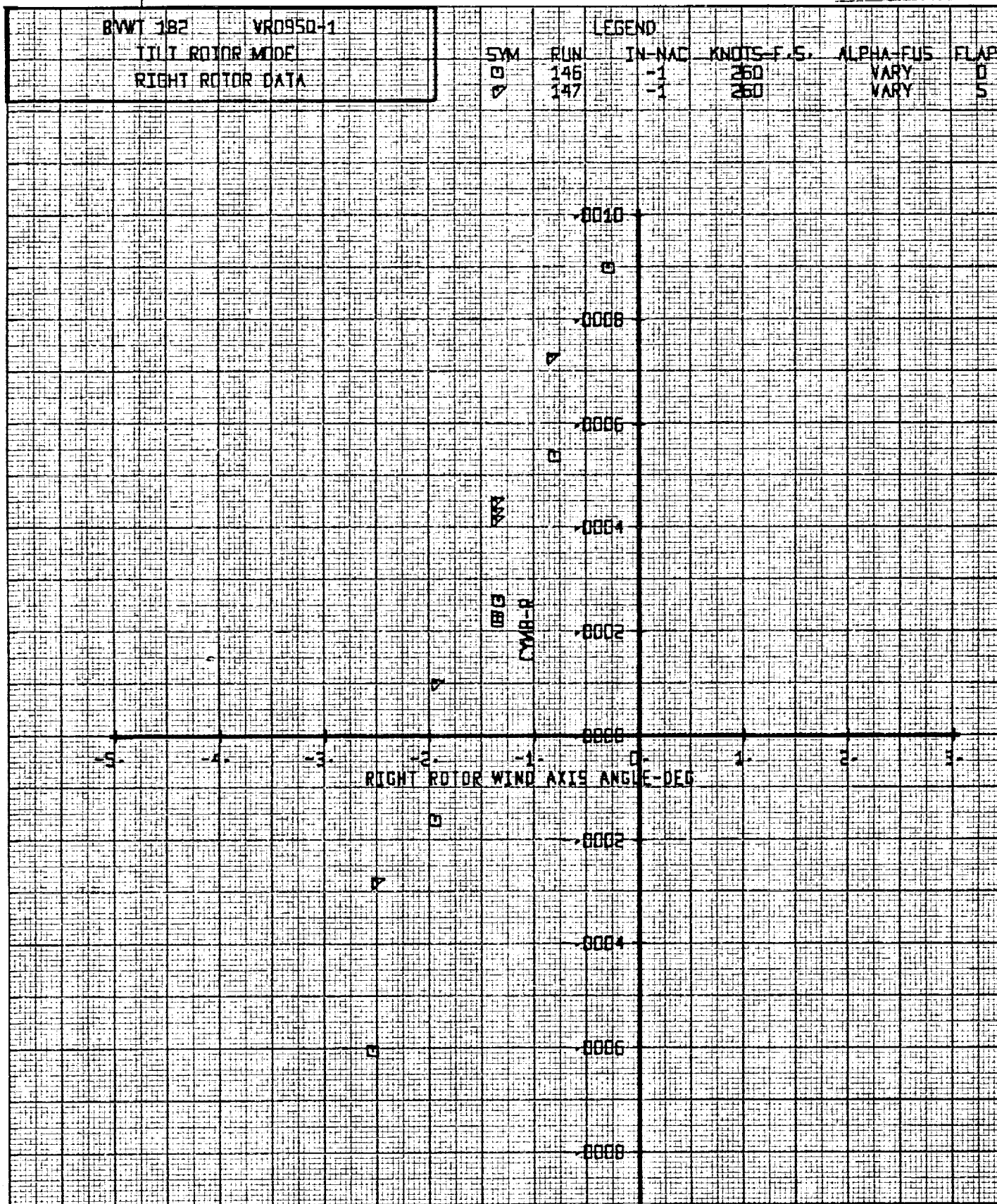
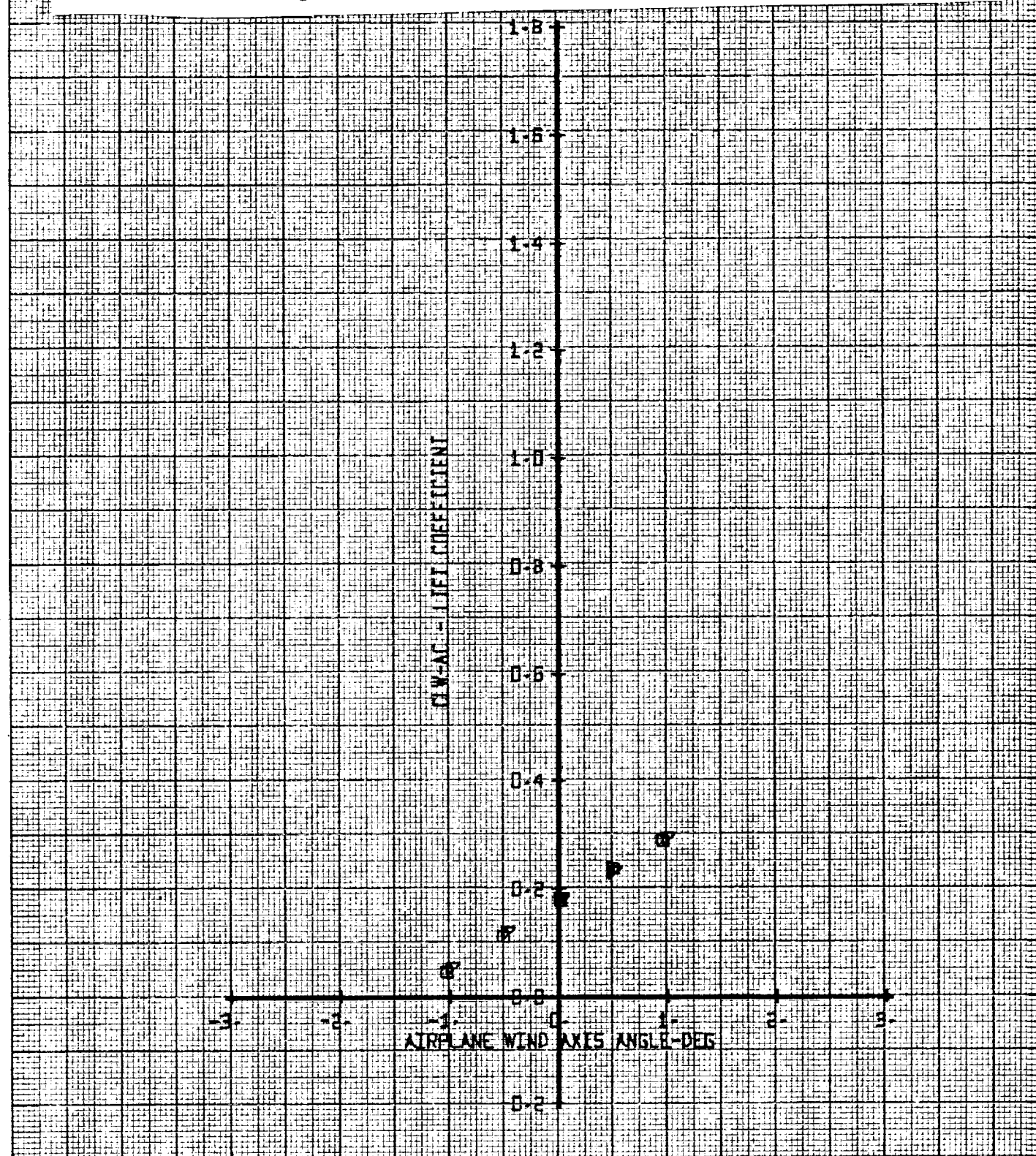


Figure 16-012. Right Rotor Yawing Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$

BYWT 182		VR0950-1				LEGEND			
TILT ROTOR MODEL						SYM	RUN	IN-NAC	KNOTS F.S.
						□	146	-1	260
						▽	147	-1	260
								ALPHA-FUS	FLAP
								VARY	0
								VARY	5

Figure 16-013. Aircraft Lift Coefficient Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$



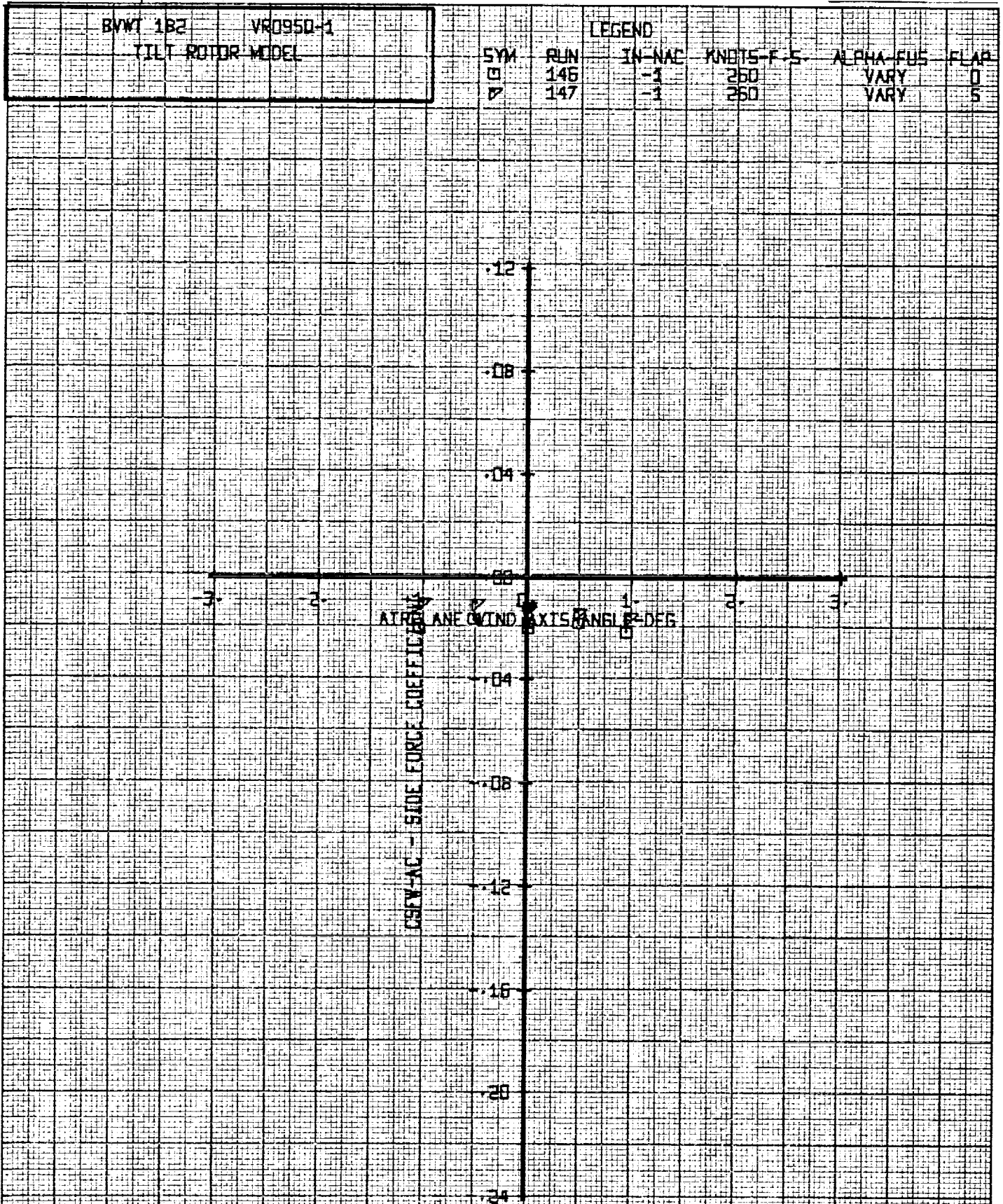


Figure 16-014. Aircraft Side Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots. $\delta F = 0^\circ, 5^\circ$

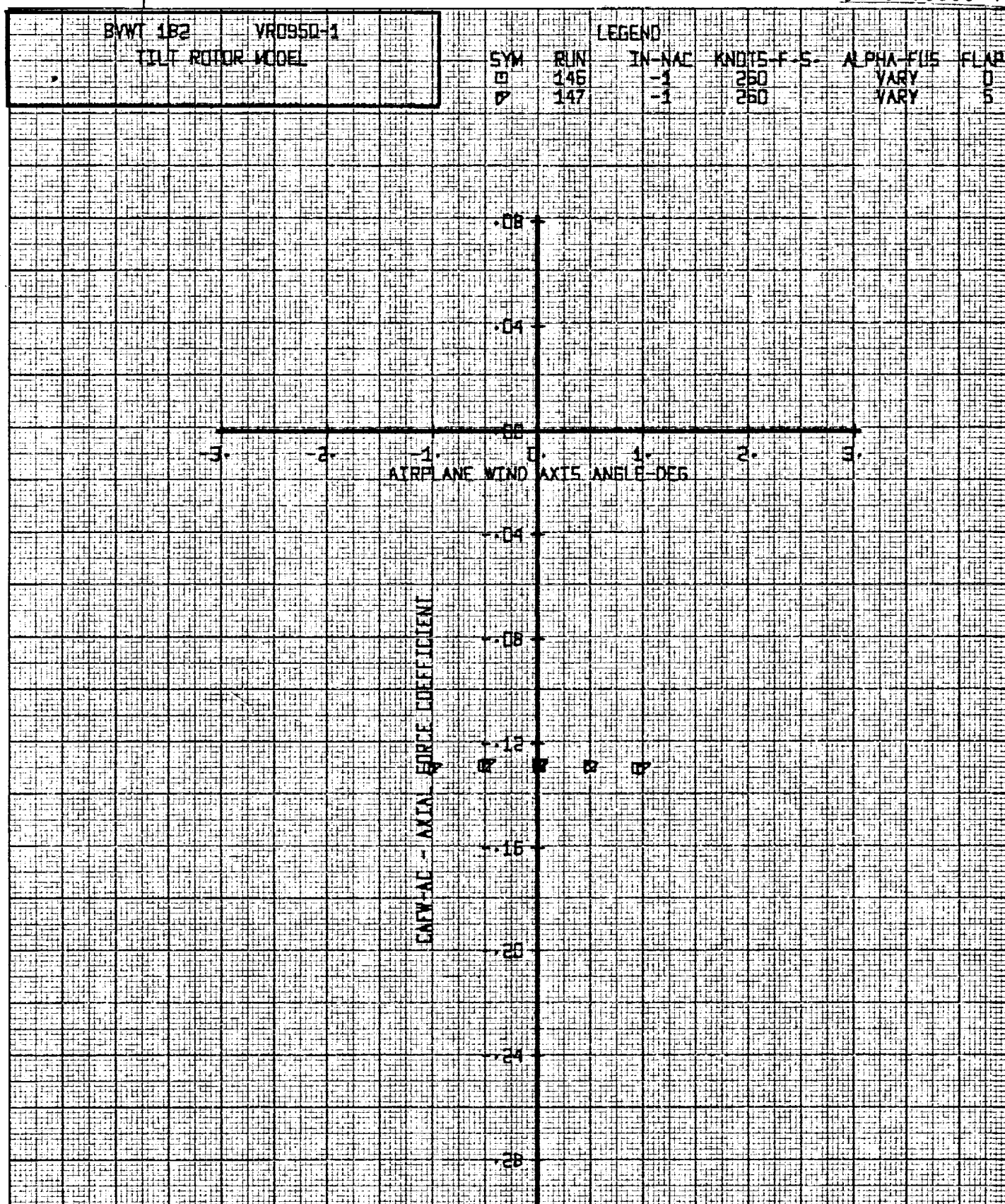


Figure 16-015. Aircraft Axial Force Coefficient Versus Angle of Attack. IN = -1° Full Scale Airspeed 260 Knots.
 $\delta F = 0^\circ, 5^\circ$

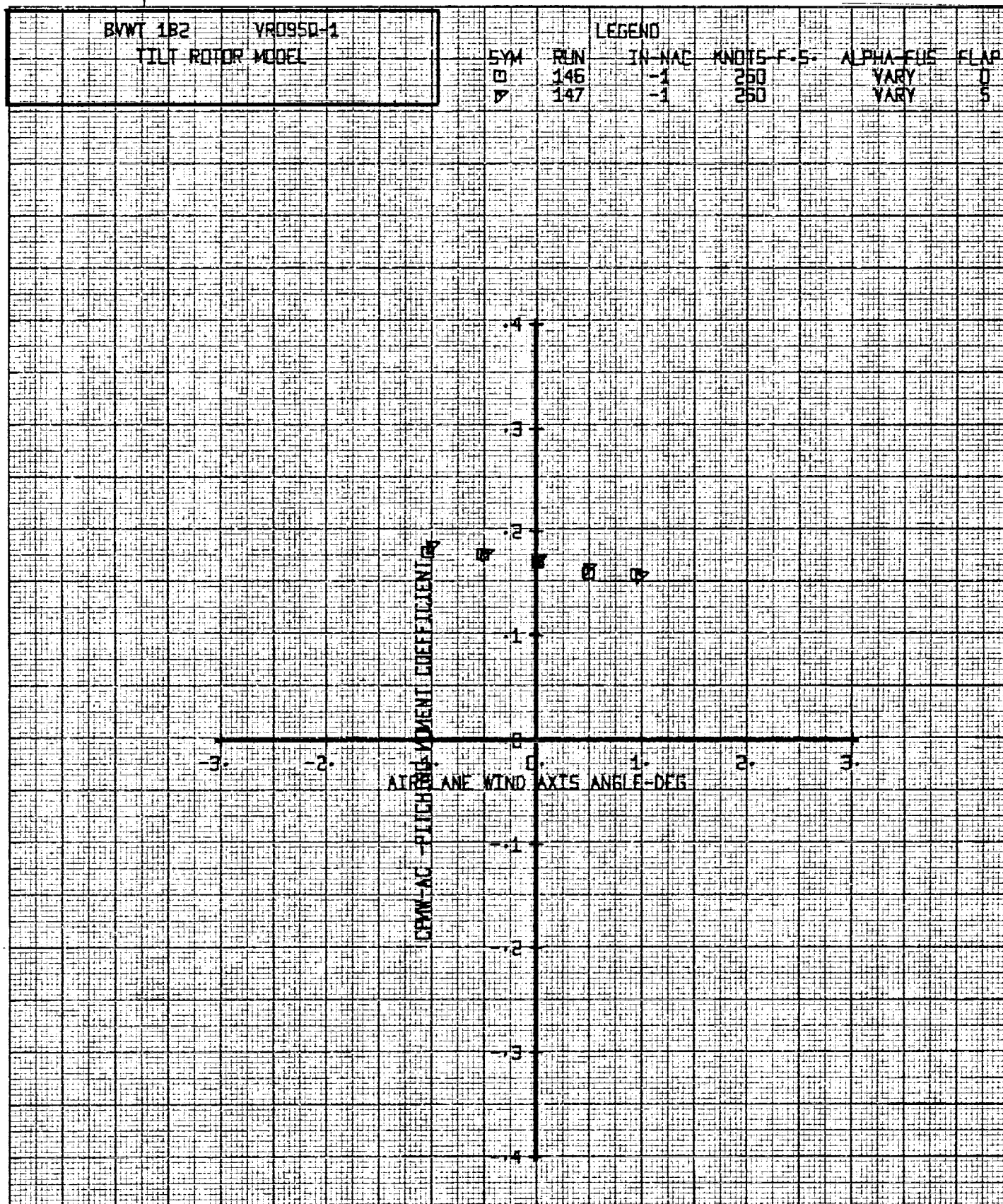
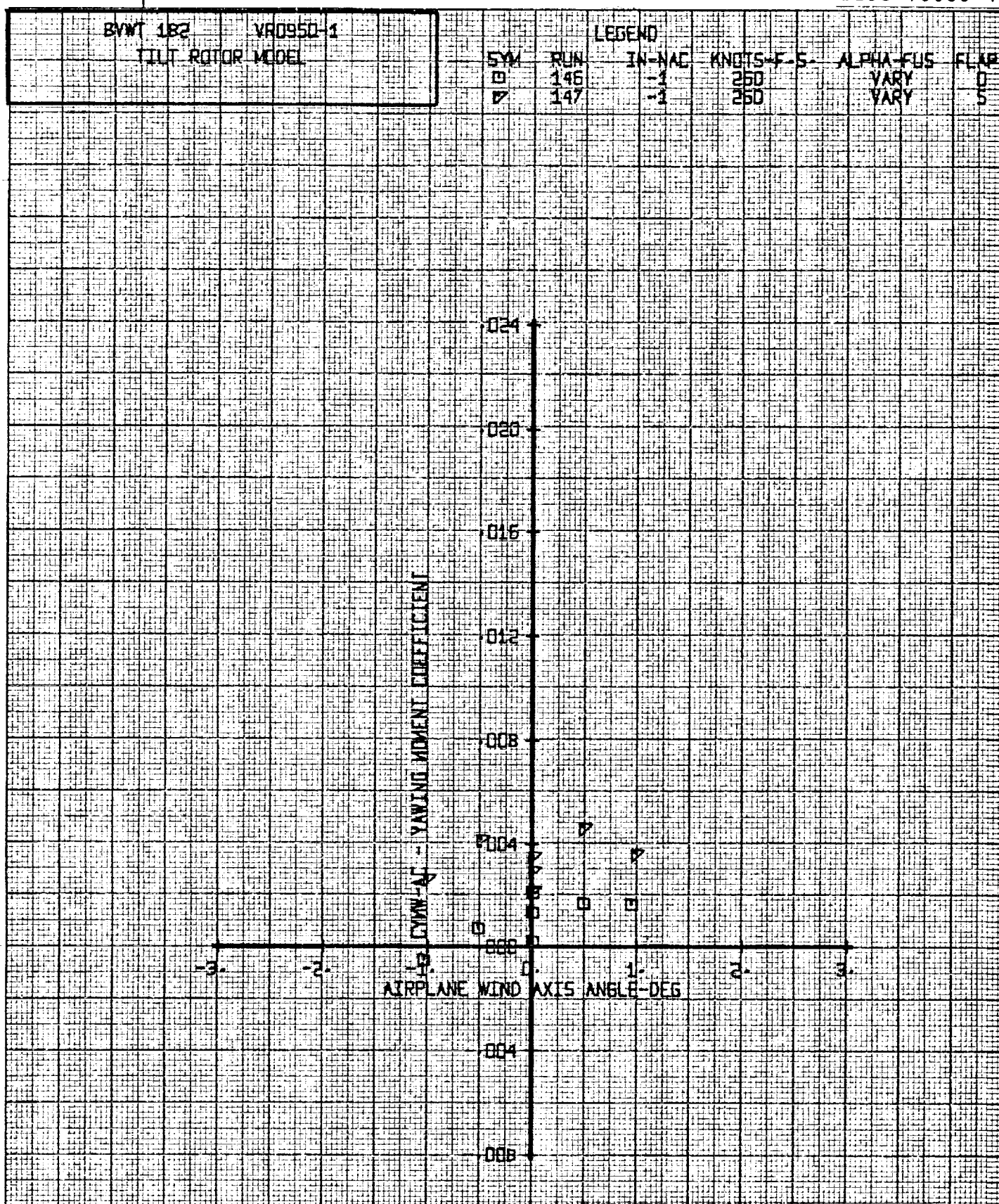


Figure 16-016. Aircraft Pitching Moment Versus Angle of Attack.
 IN = -1° Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$

334



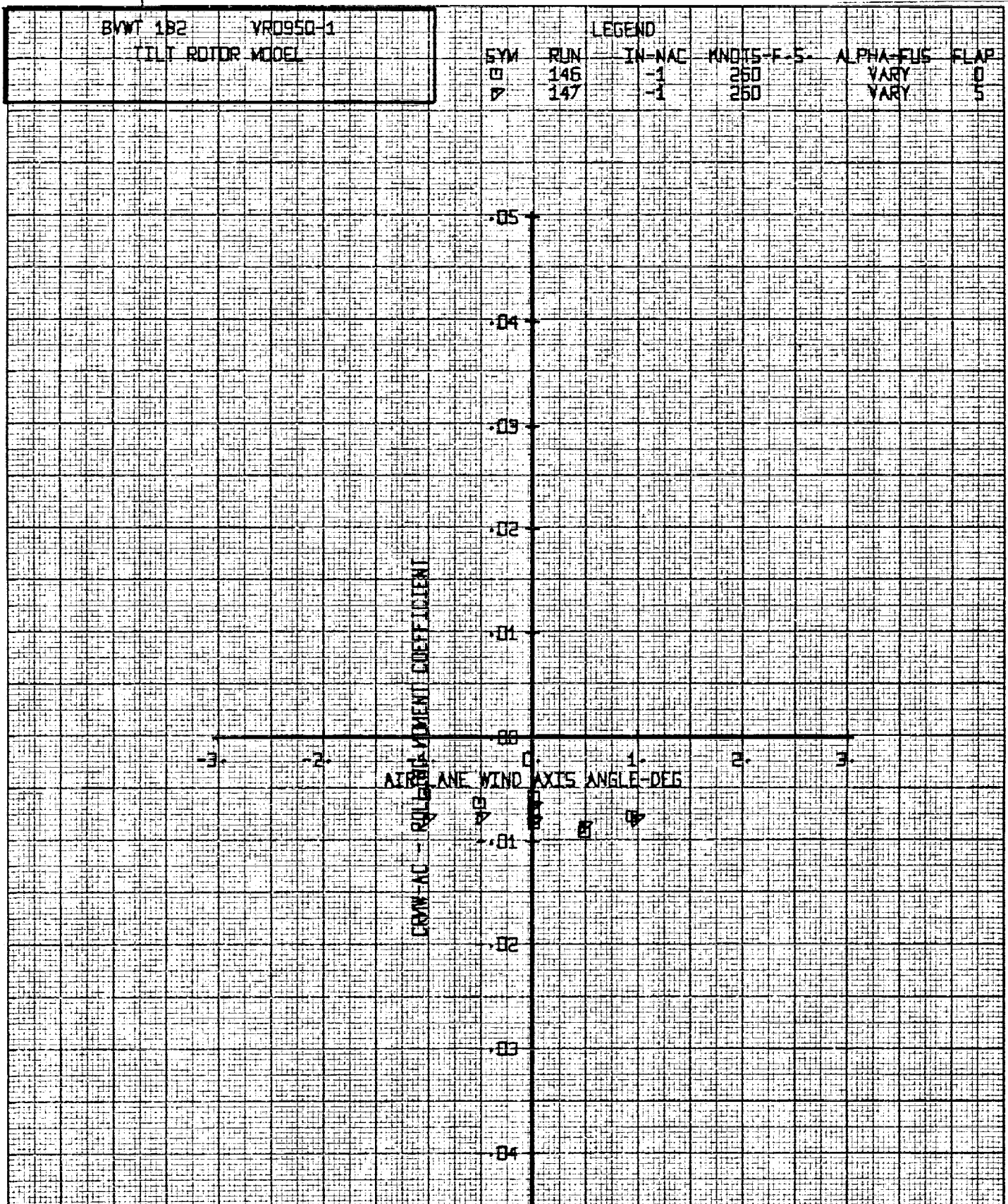


Figure 16-018. Aircraft Rolling Moment Versus Angle of Attack.
 $\alpha_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$

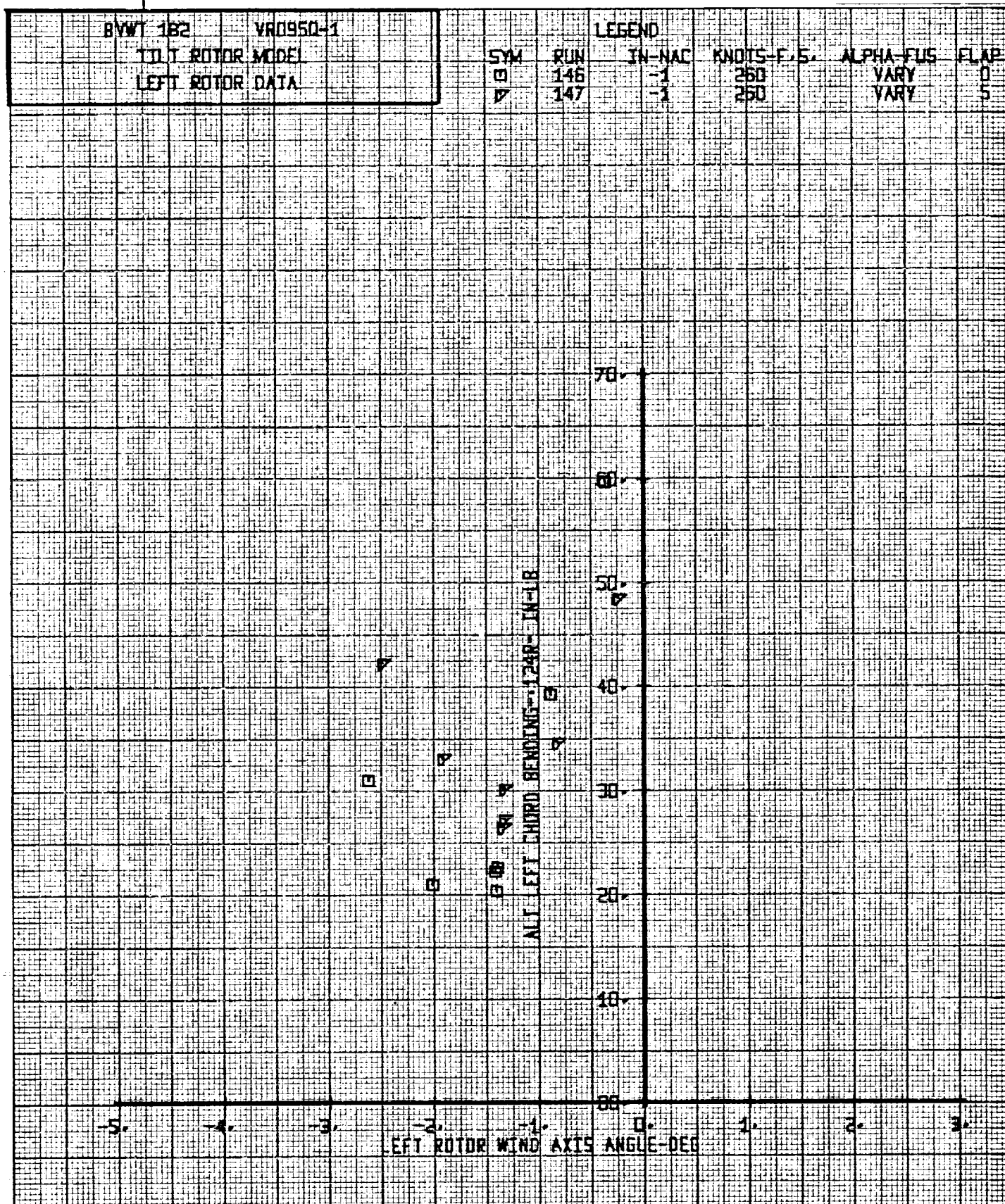


Figure 16-019. Alt. Left Chord Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$

8WWT 182 VR0950-1

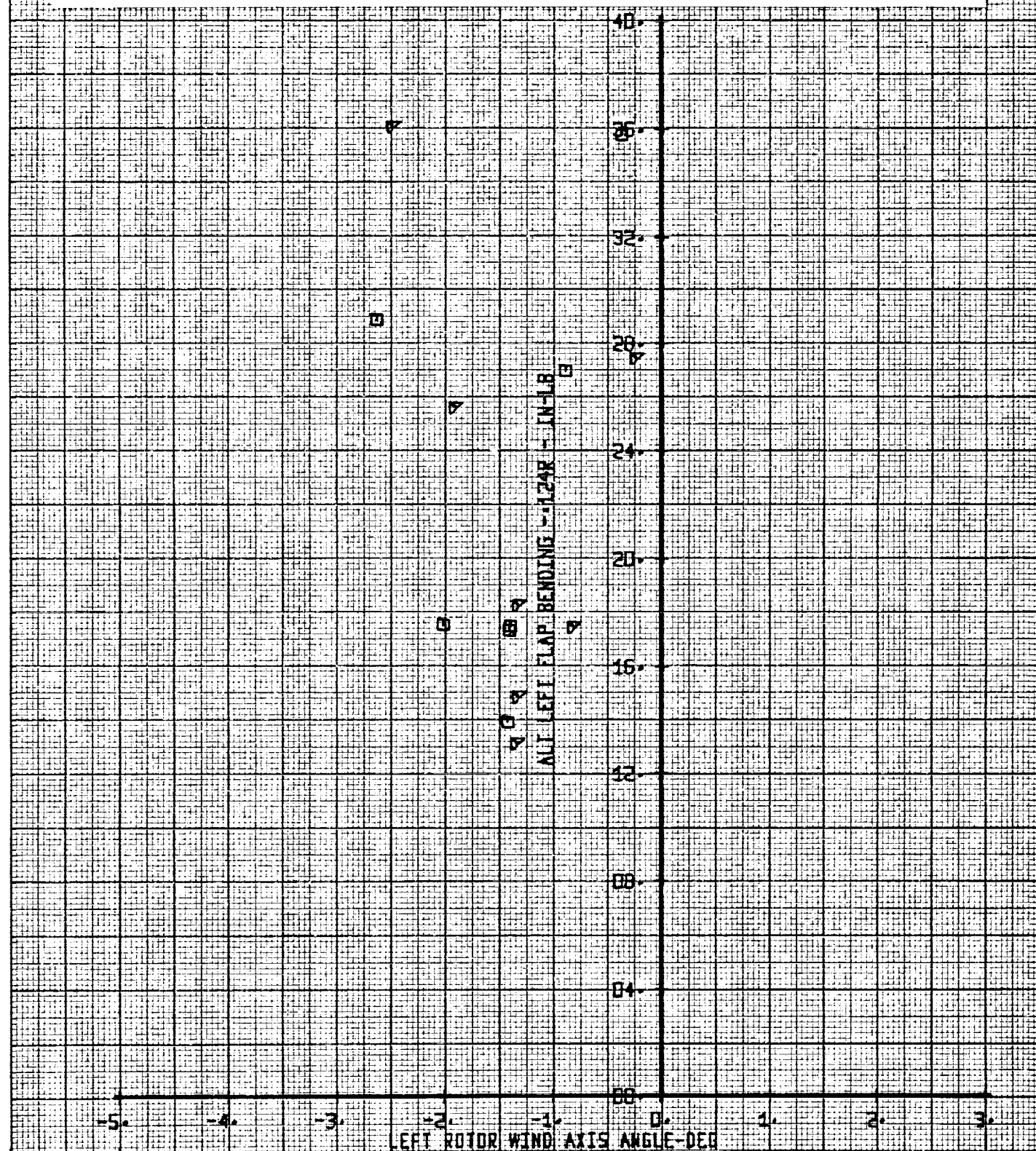
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-HAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	146	-1	260	VARY	0
▽	147	-1	260	VARY	5

Figure 16-020. Alt. Left Flap Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$



335

SET 98
BVWT 182

BWV 182 YR09SQ-1

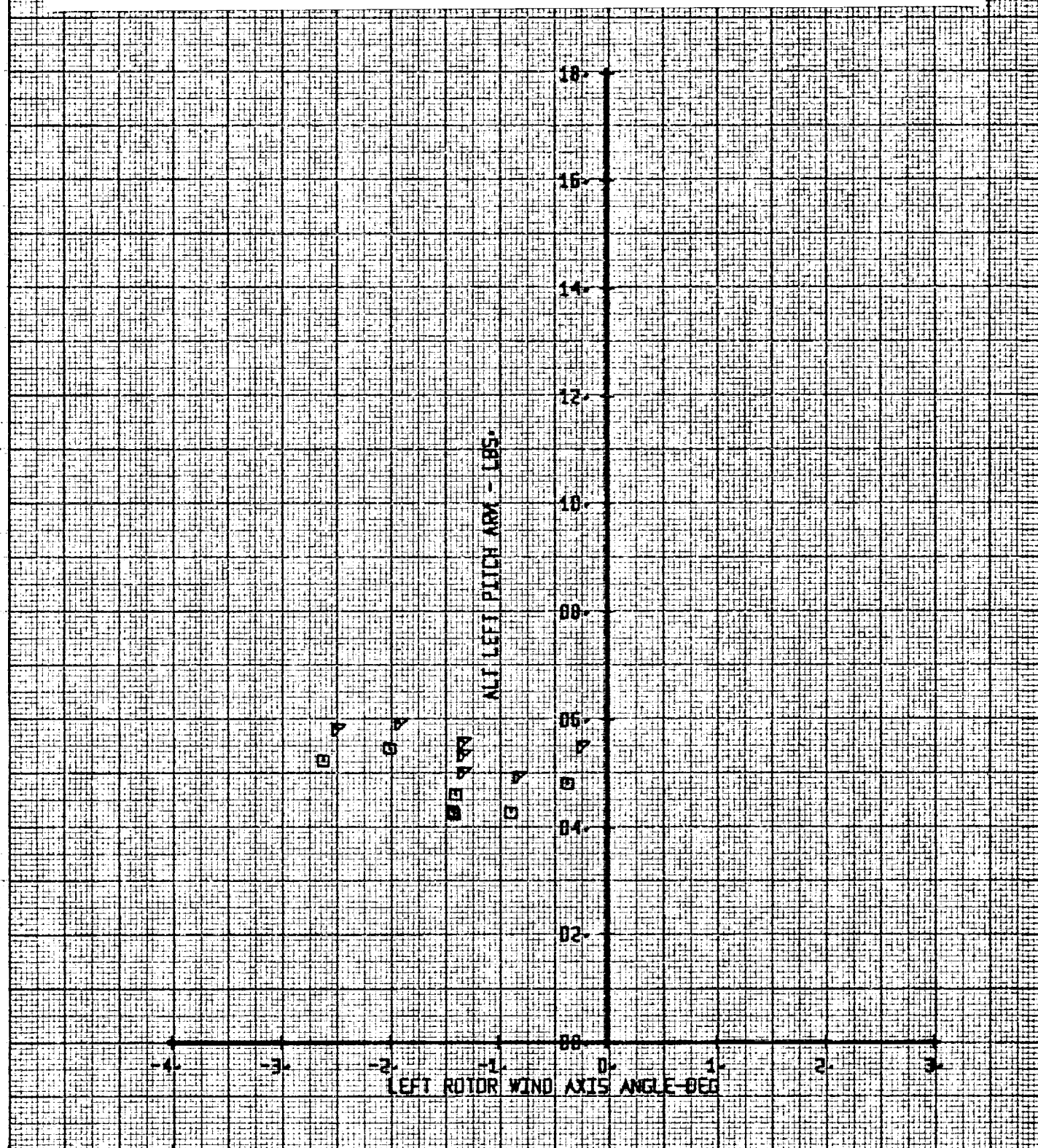
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNDIS-F-5	ALPHA-FUS	FLAP
0	146	-1	260	YARY	0
7	147	-1	260	YARY	5

Figure 16-021. Alt. Left Pitch Link Load Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$



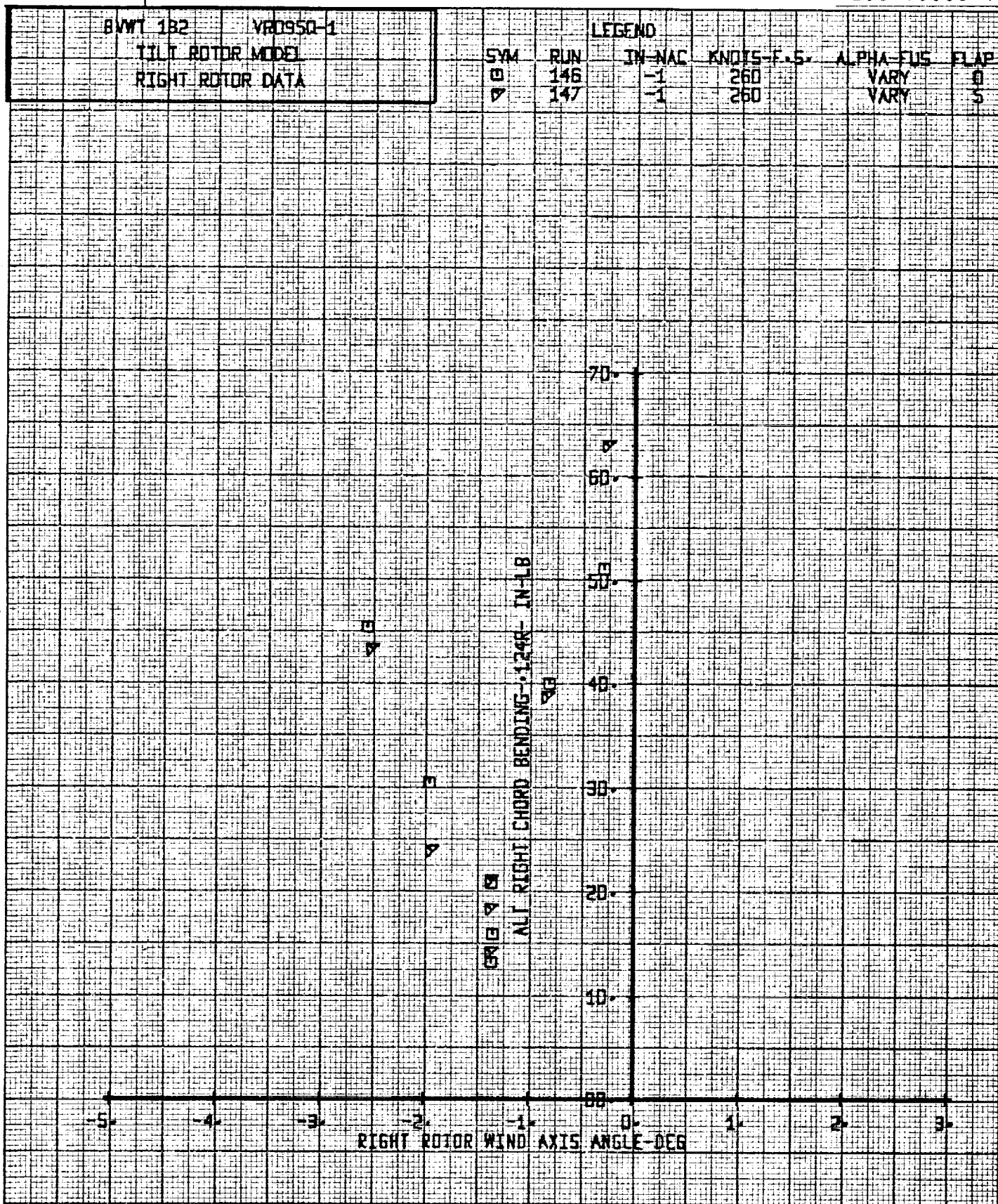


Figure 16-022. Alt. Right Chord Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$

BVWT 182 VR0950-1

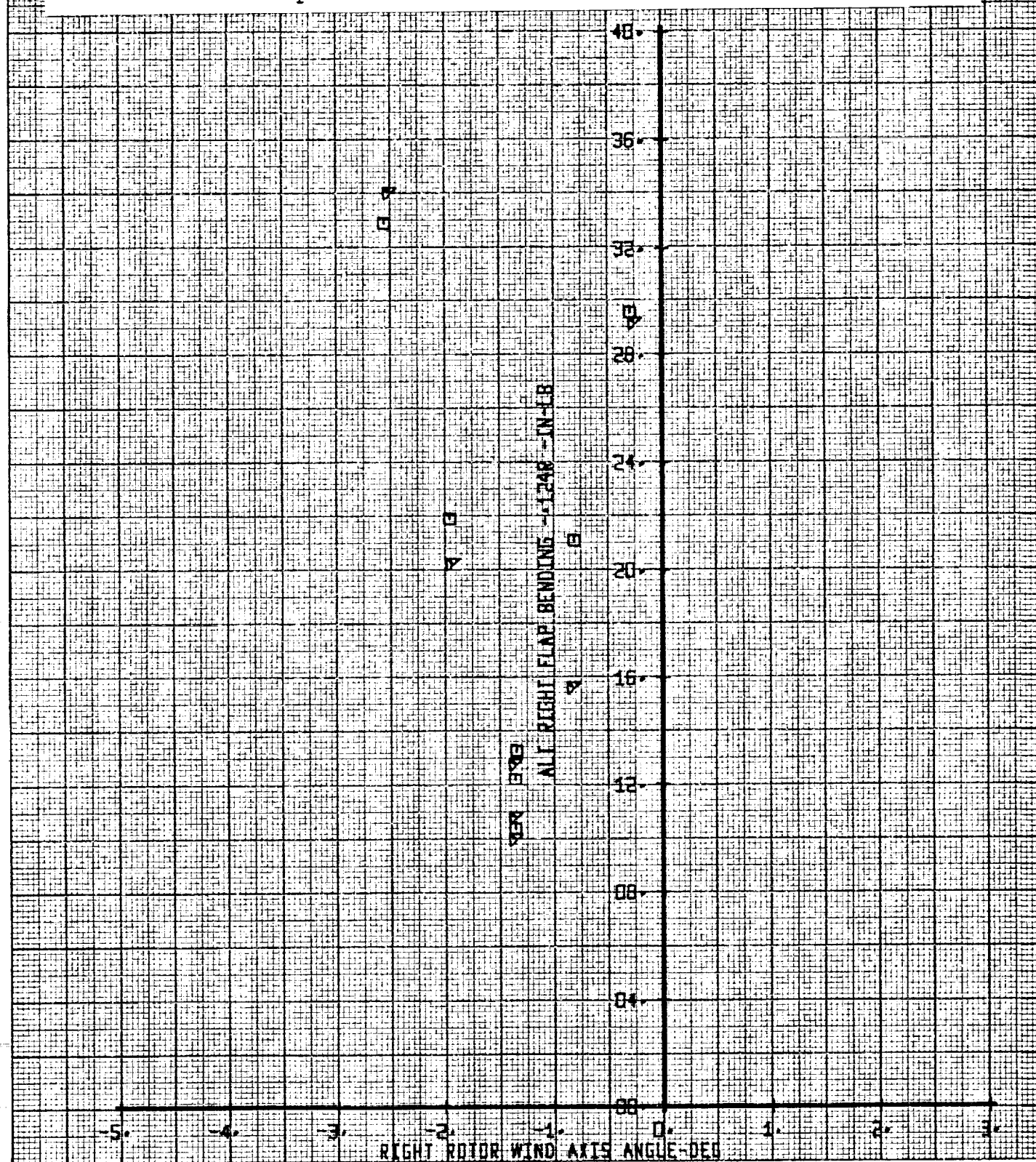
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS F.S.	ALPHA-FUS	FLAP
□	146	-1	260	VARY	0
▽	147	-1	260	VARY	5

Figure 16-023. Alt. Right Flap Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$



BVWT 182 YR0950-1

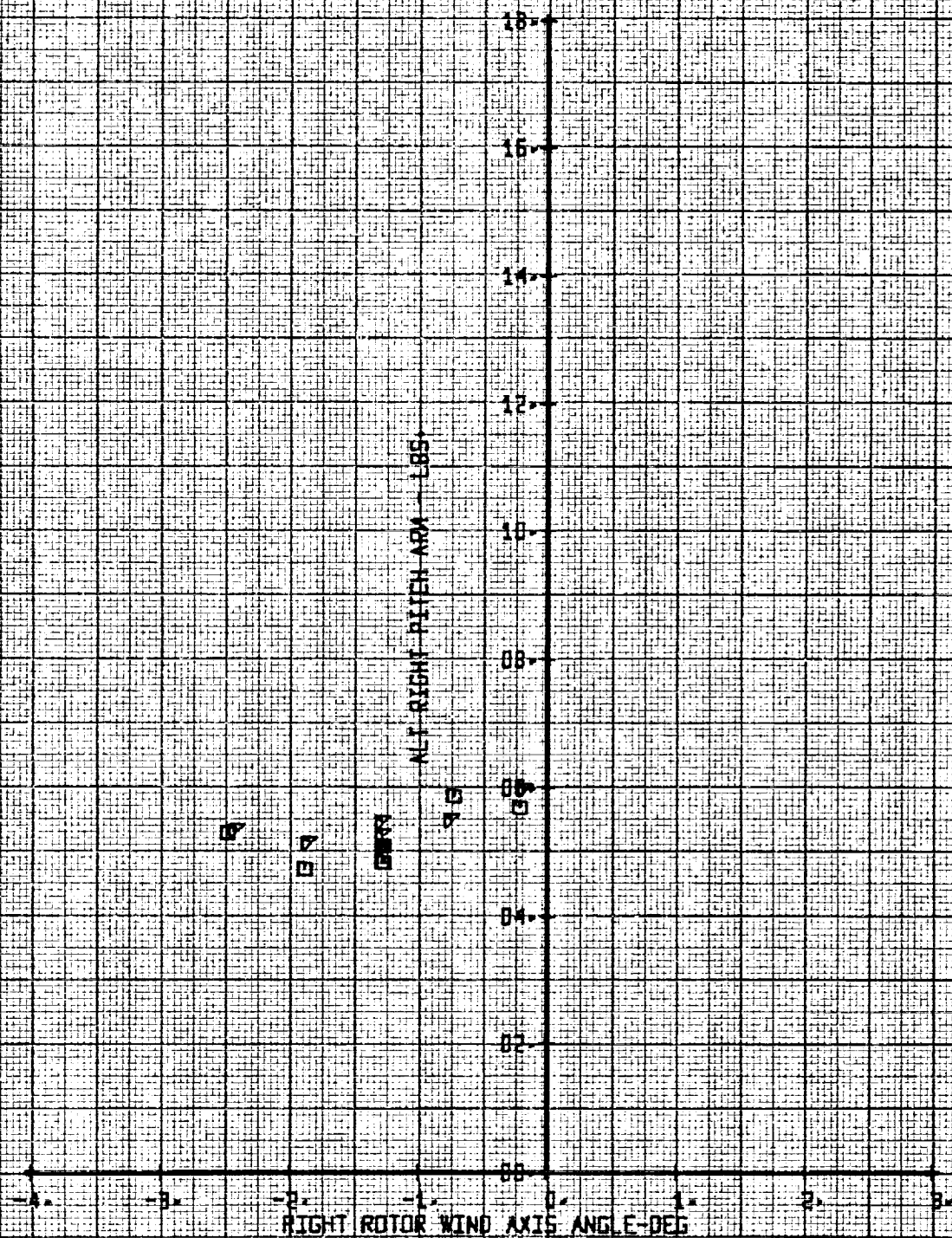
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM
Q
7RUN
146
147IN-NAC
-1
-1KNOTS-F-5
260
260ALPHA-FUS
VARY
VARYFLAP
D
5

Figure 16-024. Alt. Right Pitch Link Load Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.
 $\delta_F = 0^\circ, 5^\circ$



342

SET 98
BVWT 182

BVWT 182 VRD950-1

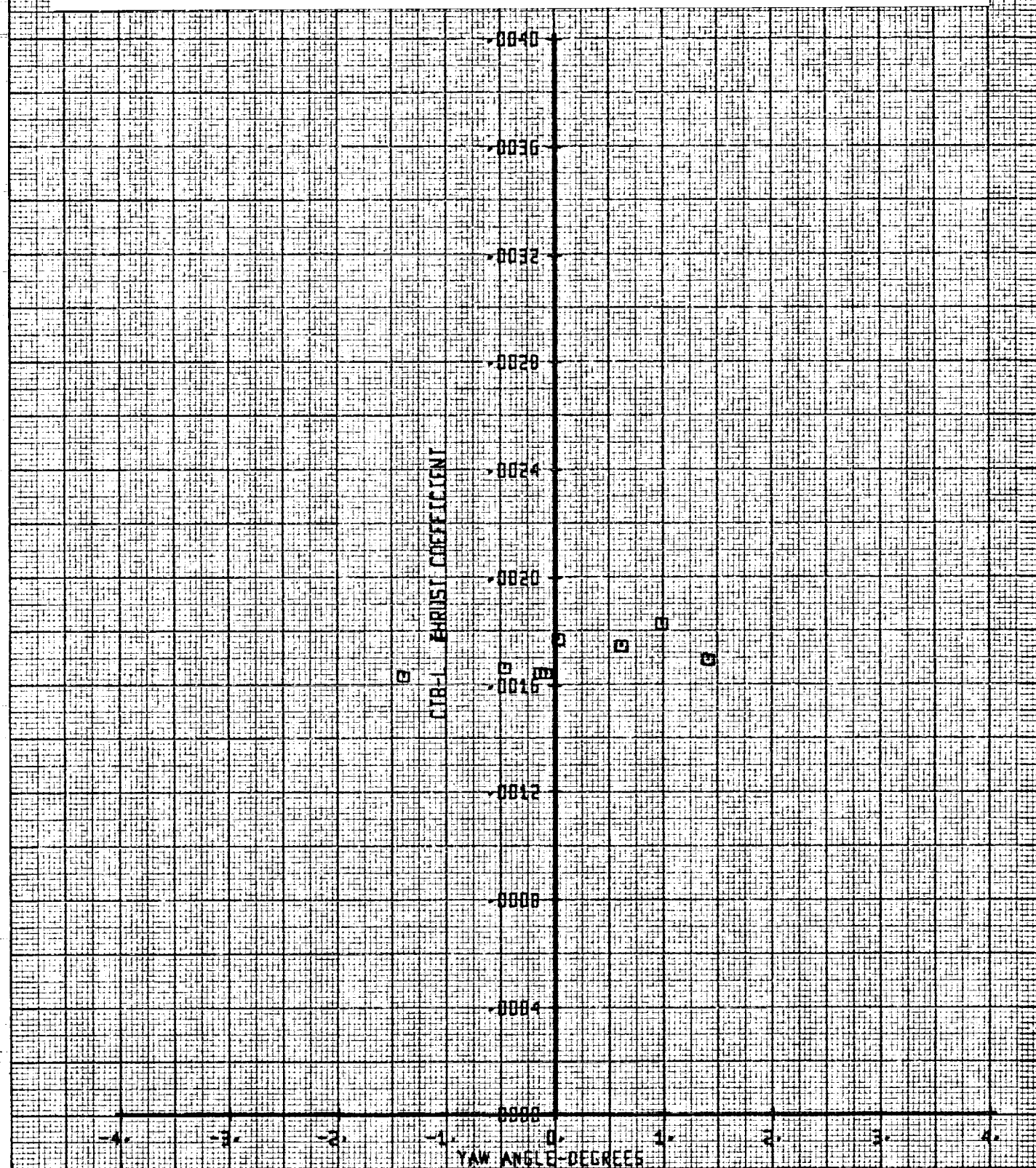
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-MAC	KNOTS-F.S.	ALPHA-FLS	FLAP
□	148	-1	260	0	0

Figure 16-025. Left Rotor Thrust Coefficient Versus Yaw Angle γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



BVWT 182 VR0950-1

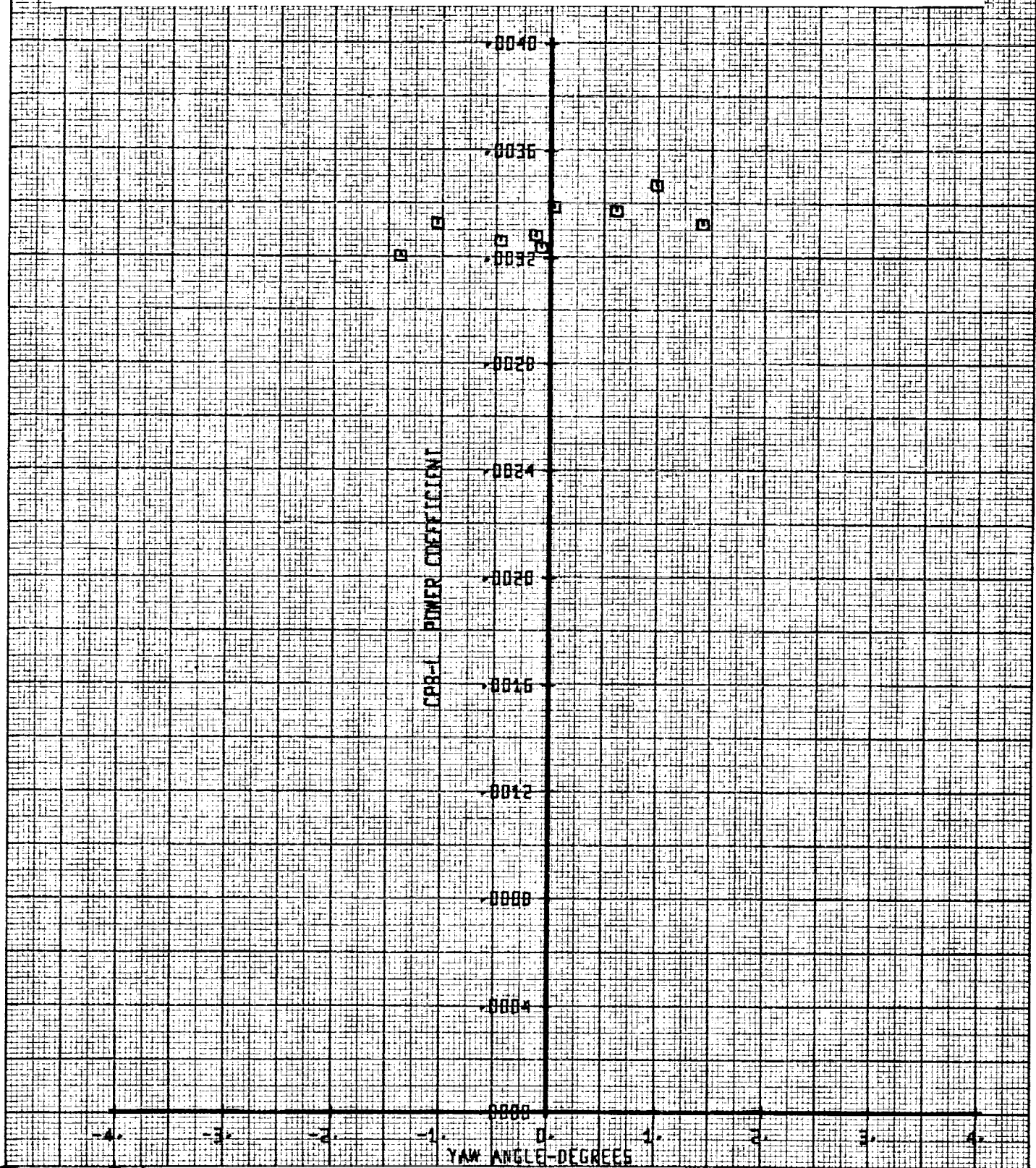
TILT ROTOR MODE

LEFT ROTOR DATA

LEGEND

SYM
□RUN
148IN-NAC
-1KNOTS-F.S.
260ALPHA-EUS
0FLAP
0

Figure 16-026. Left Rotor Power Coefficient Versus Yaw Angle γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



344

 SET 100
 BVWT 182

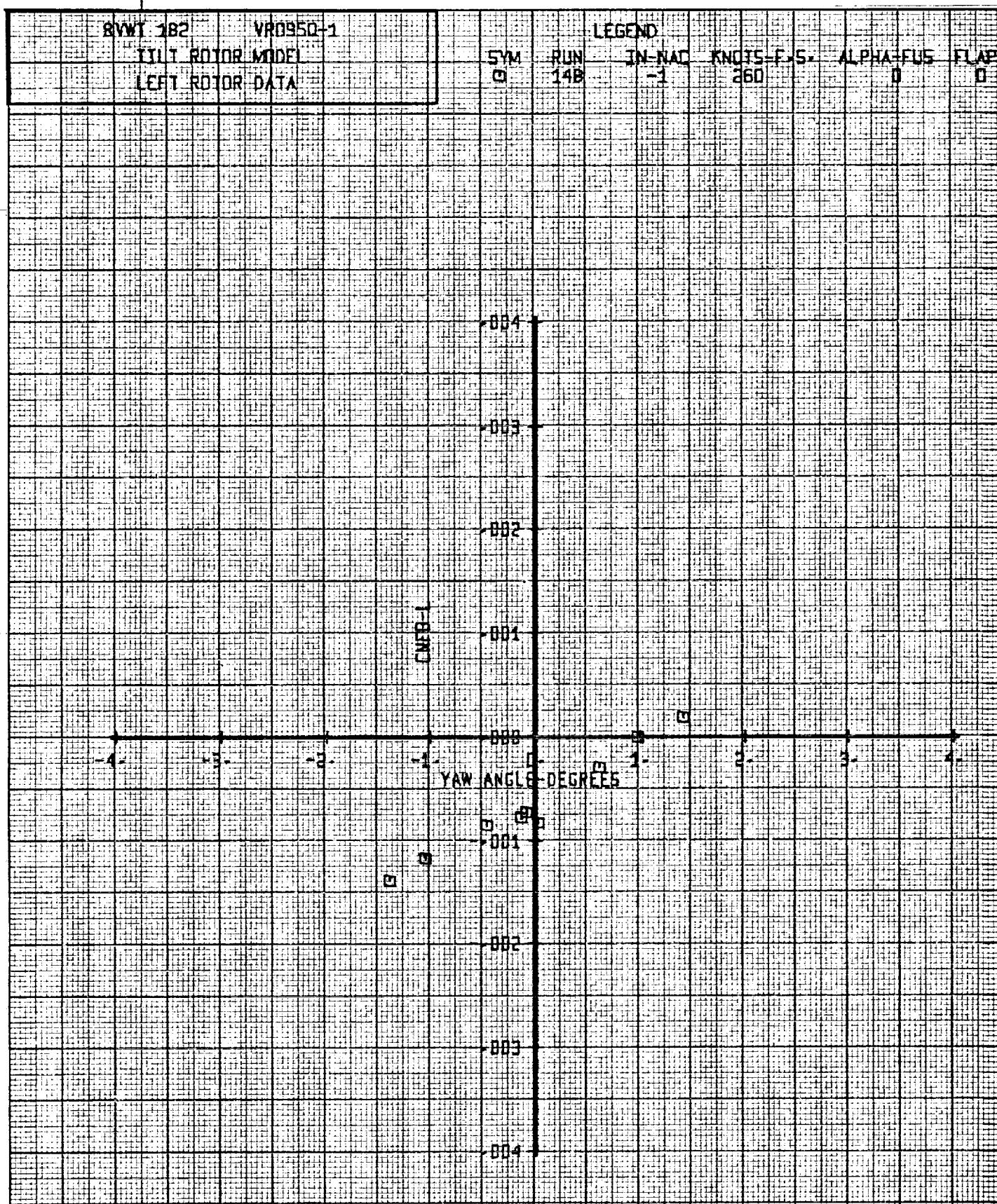


Figure 16-027. Left Rotor Normal Force Coefficient Versus Yaw Angle γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

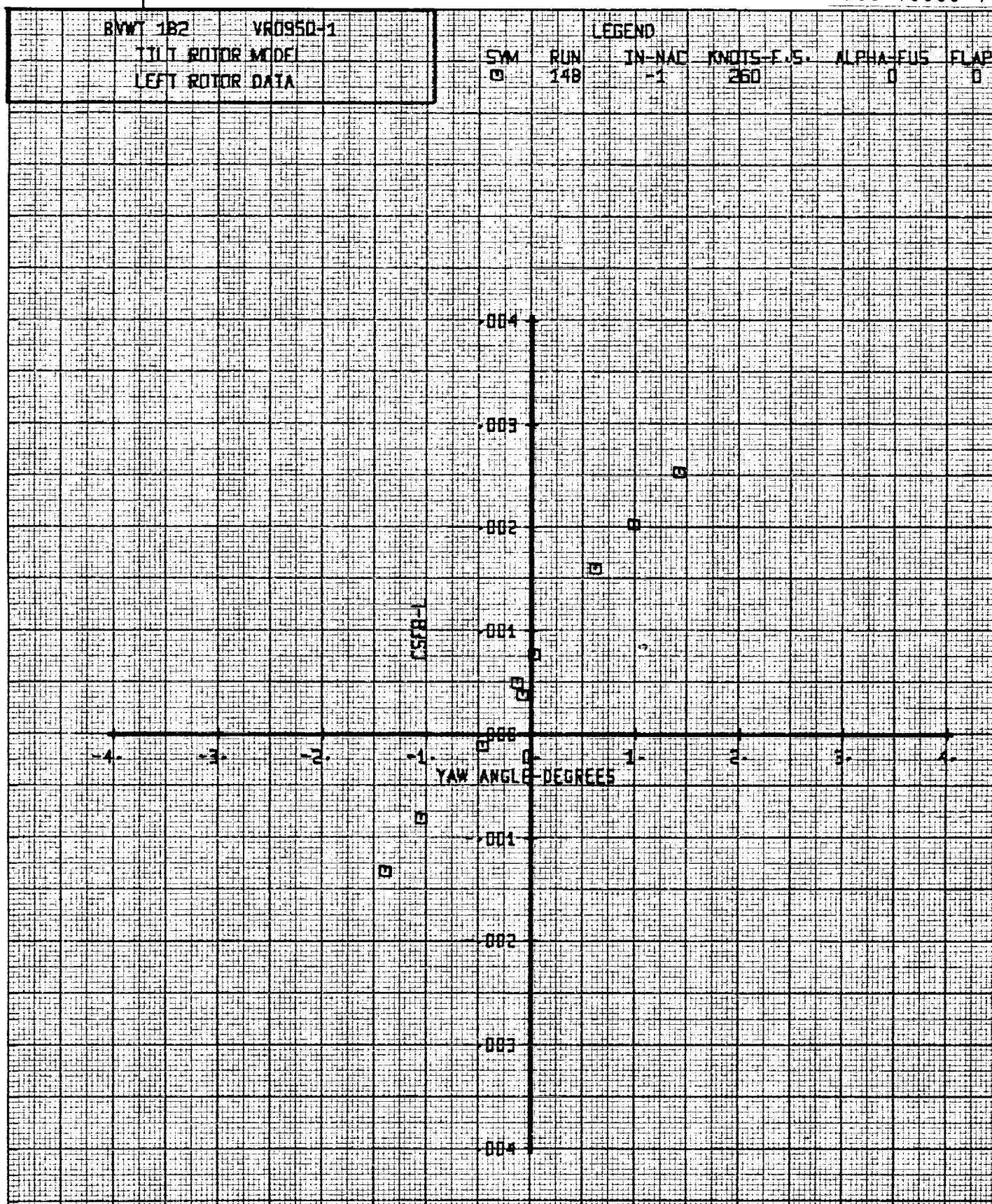


Figure 16-028. Left Rotor Side Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

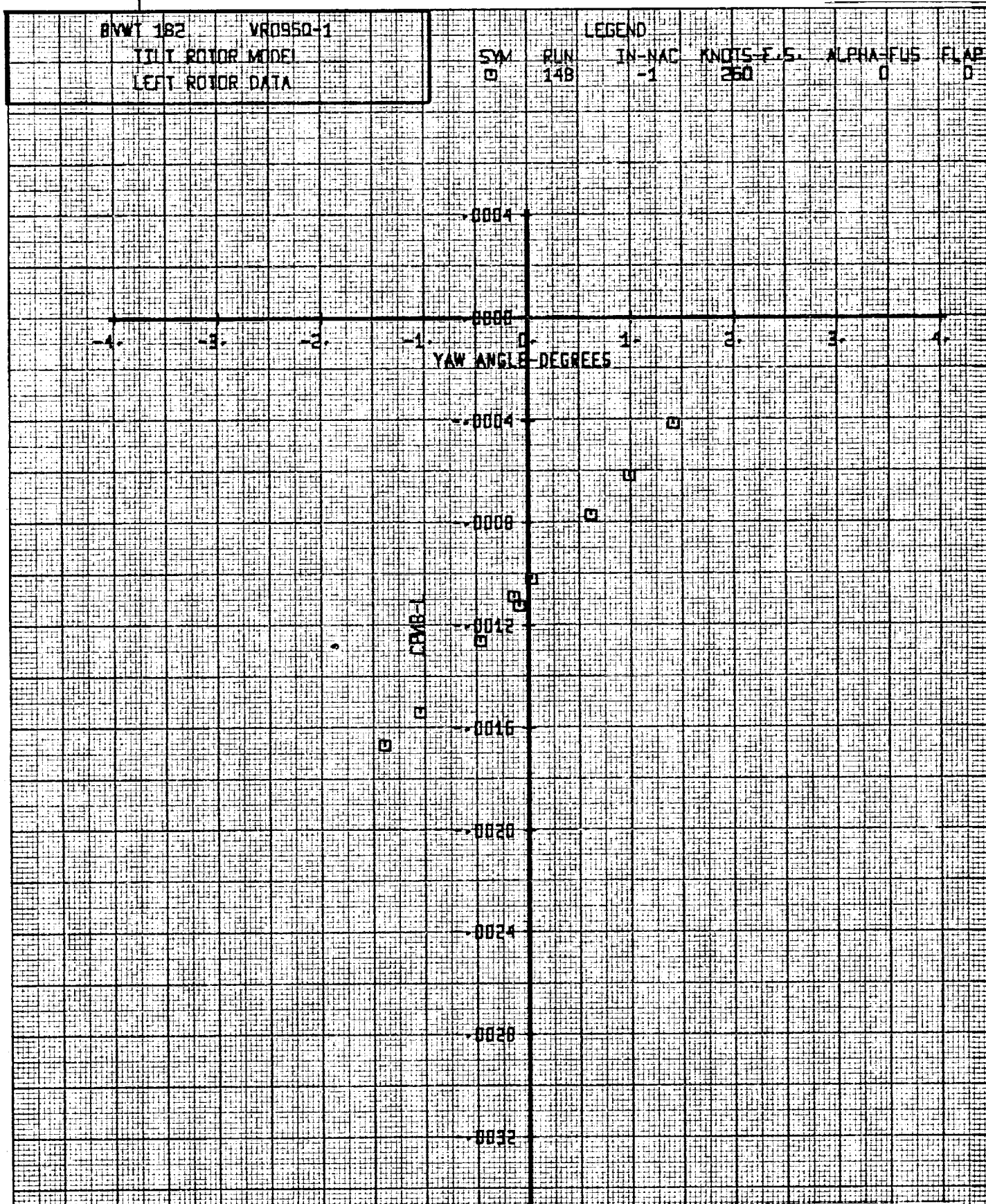


Figure 16-029. Left Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

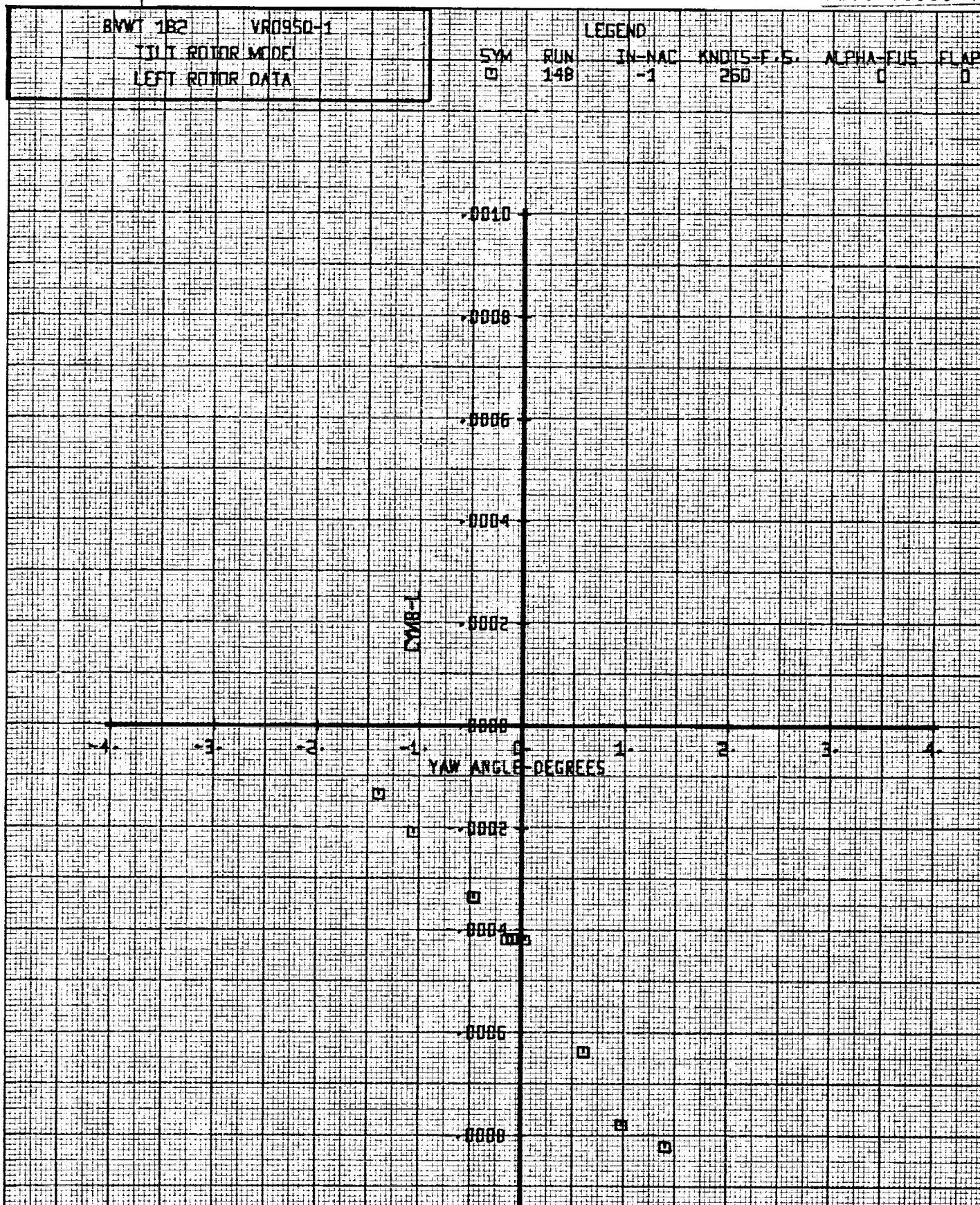


Figure 16-030. Left Rotor Yawing Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

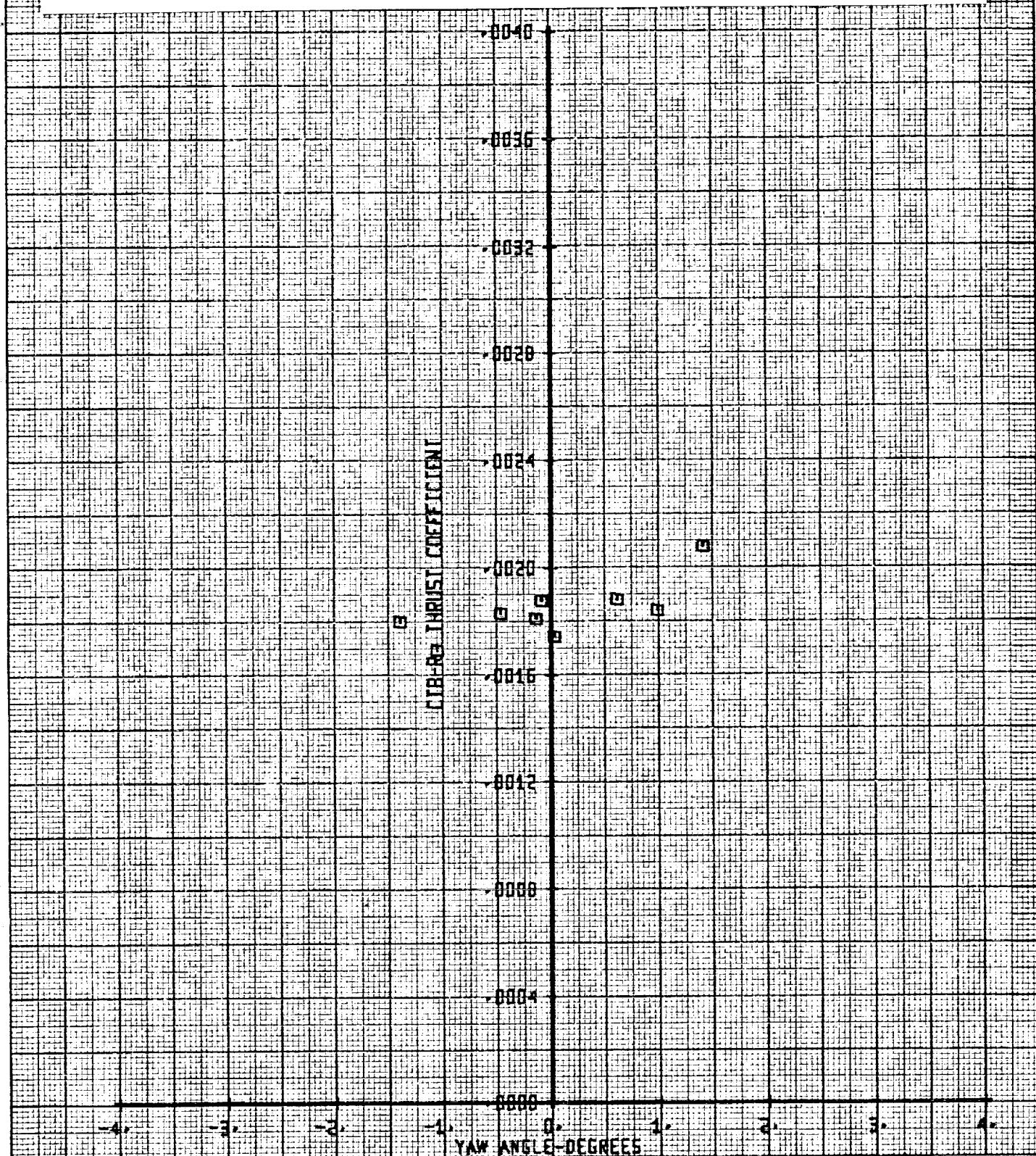
BVWT 182 VR0950-1

TIL I ROTOR MODEL
RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	148	-1	260	0	0

Figure 16-031. Right Rotor Thrust Coefficient Versus Yaw Angle
 γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



BVWT 182 VRD950-1

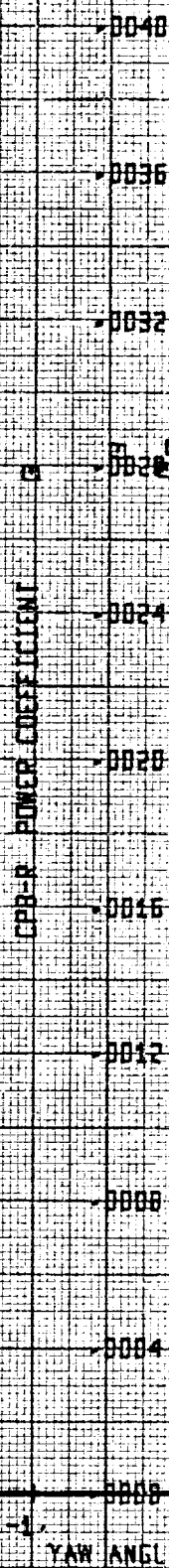
Y101 ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM
CRUN
148IN-NAC
-1KNOTS-F.S.
260ALPHA-FUS
0FLAP
0

Figure 16-032. Right Rotor Power Coefficient Versus Yaw Angle γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



350

SET 100
BVWT 182

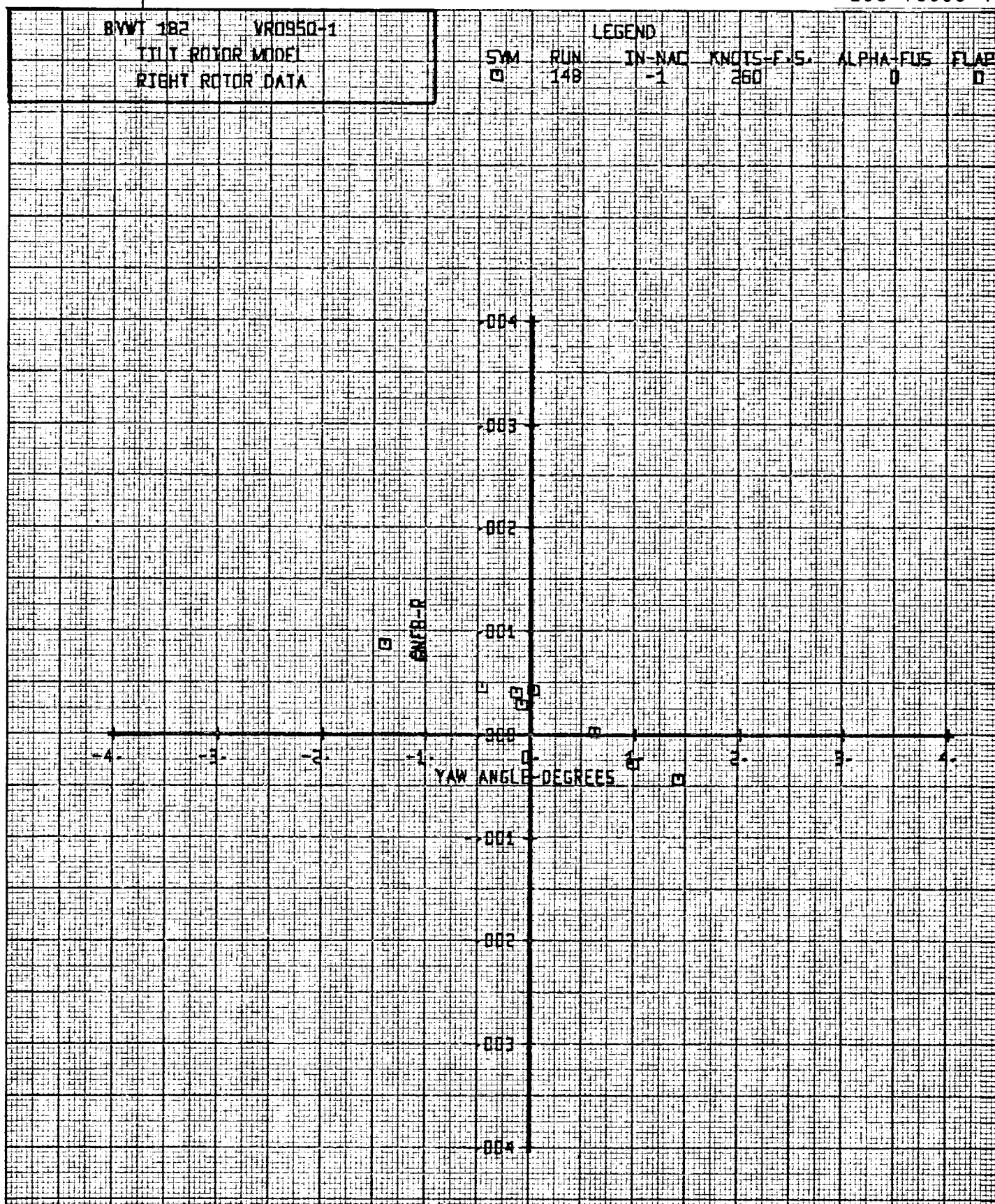


Figure 16-033. Right Rotor Normal Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

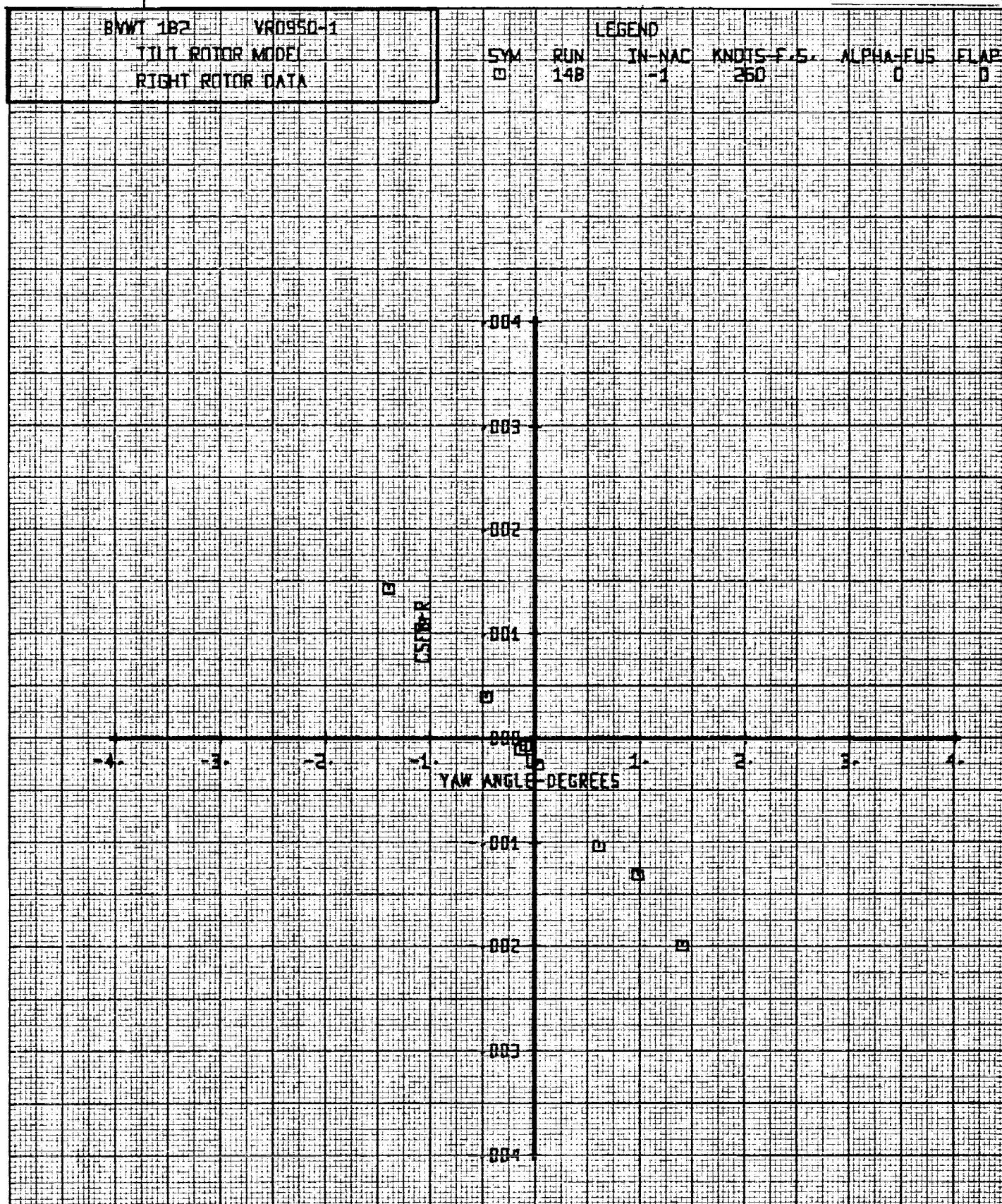


Figure 16-034. Right Rotor Side Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

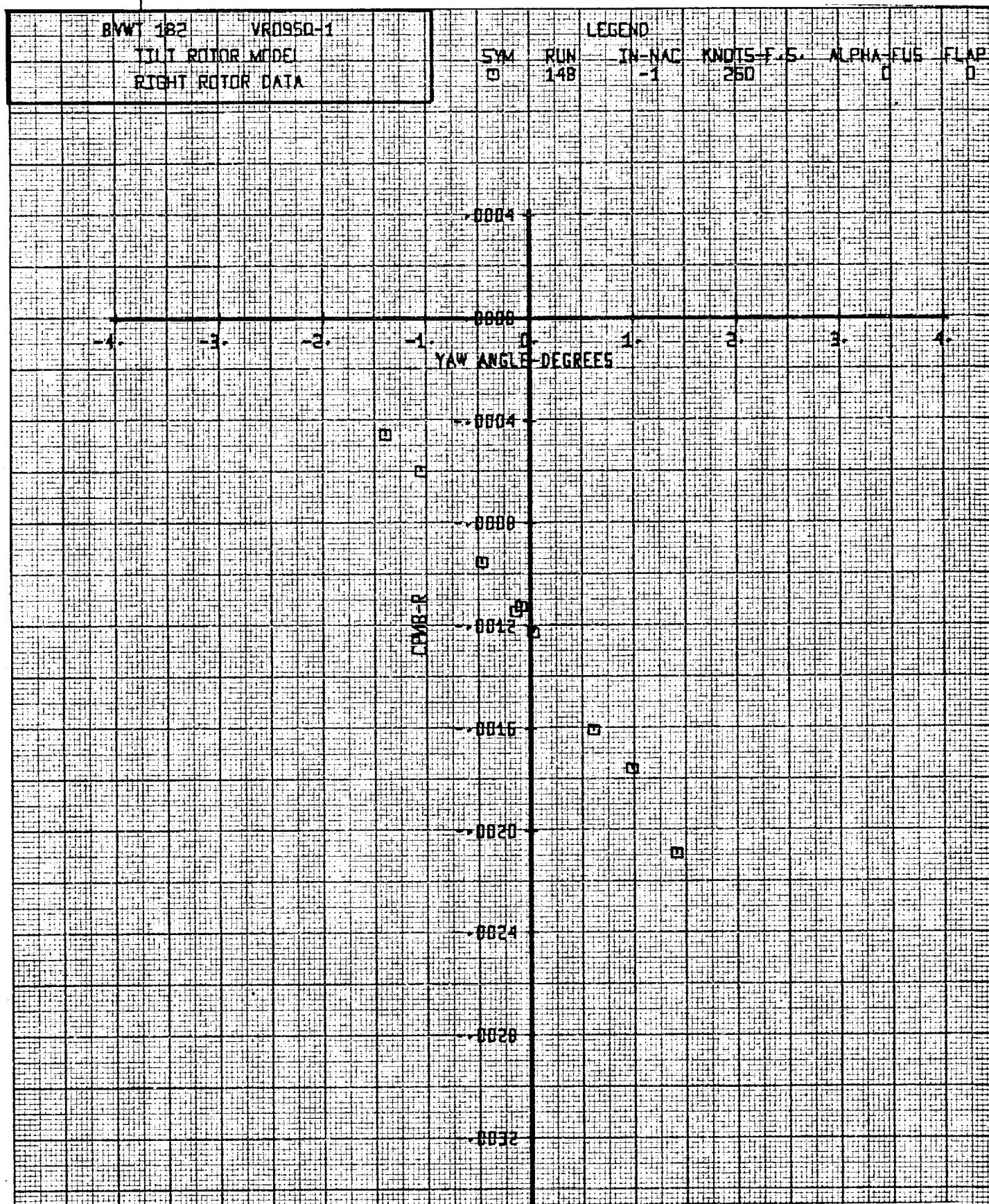


Figure 16-035. Right Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

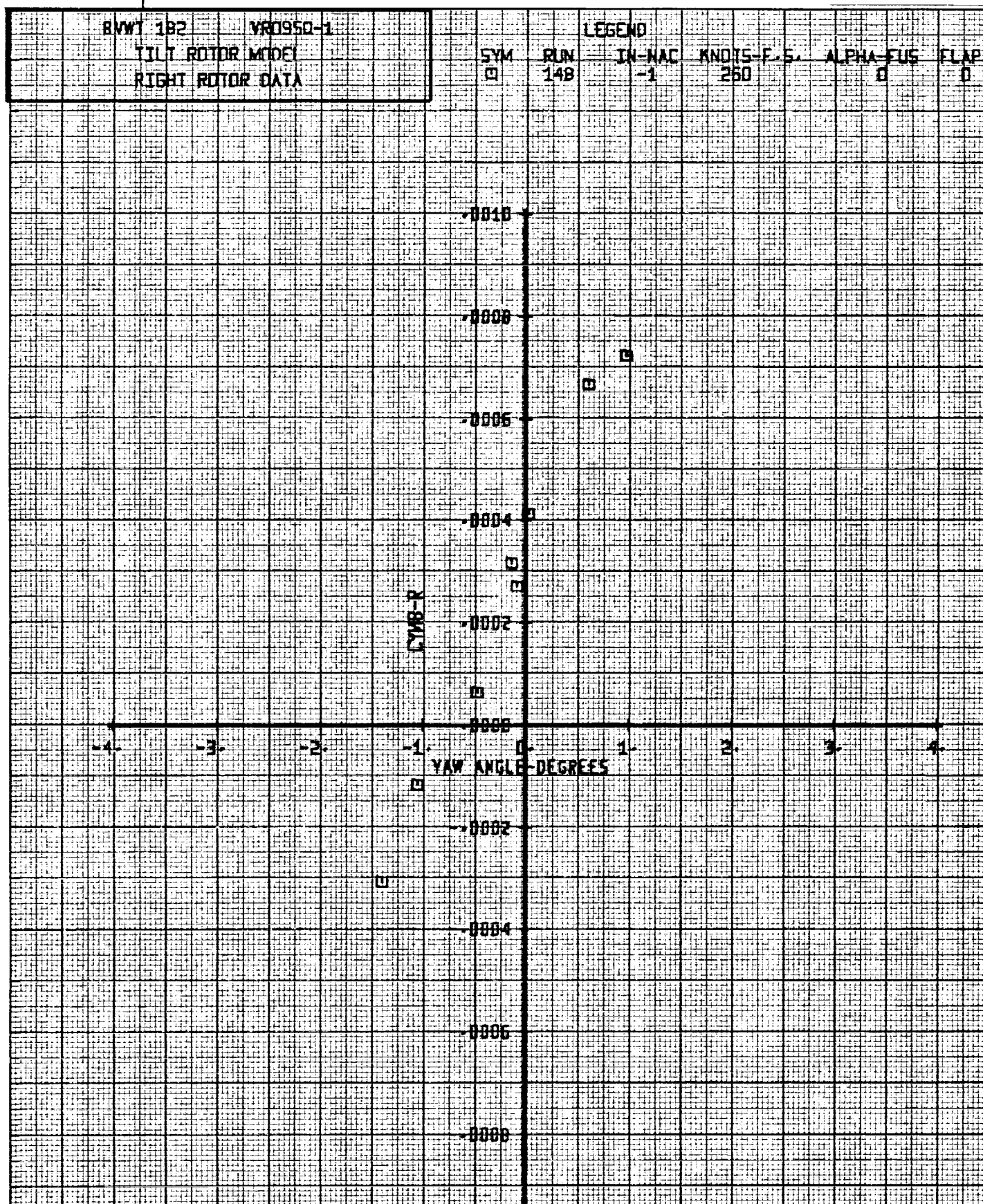


Figure 16-036. Right Rotor Yawing Moment Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

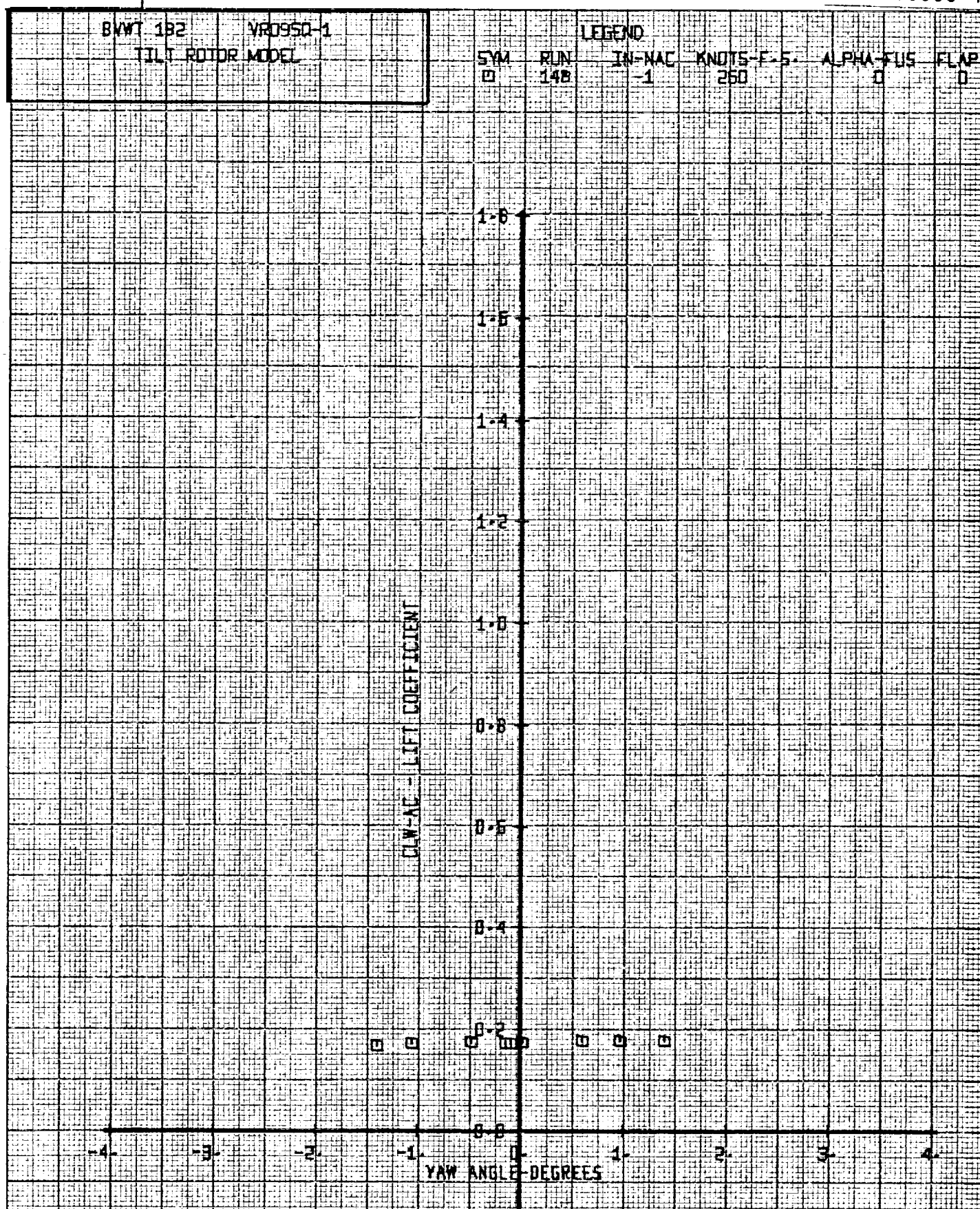
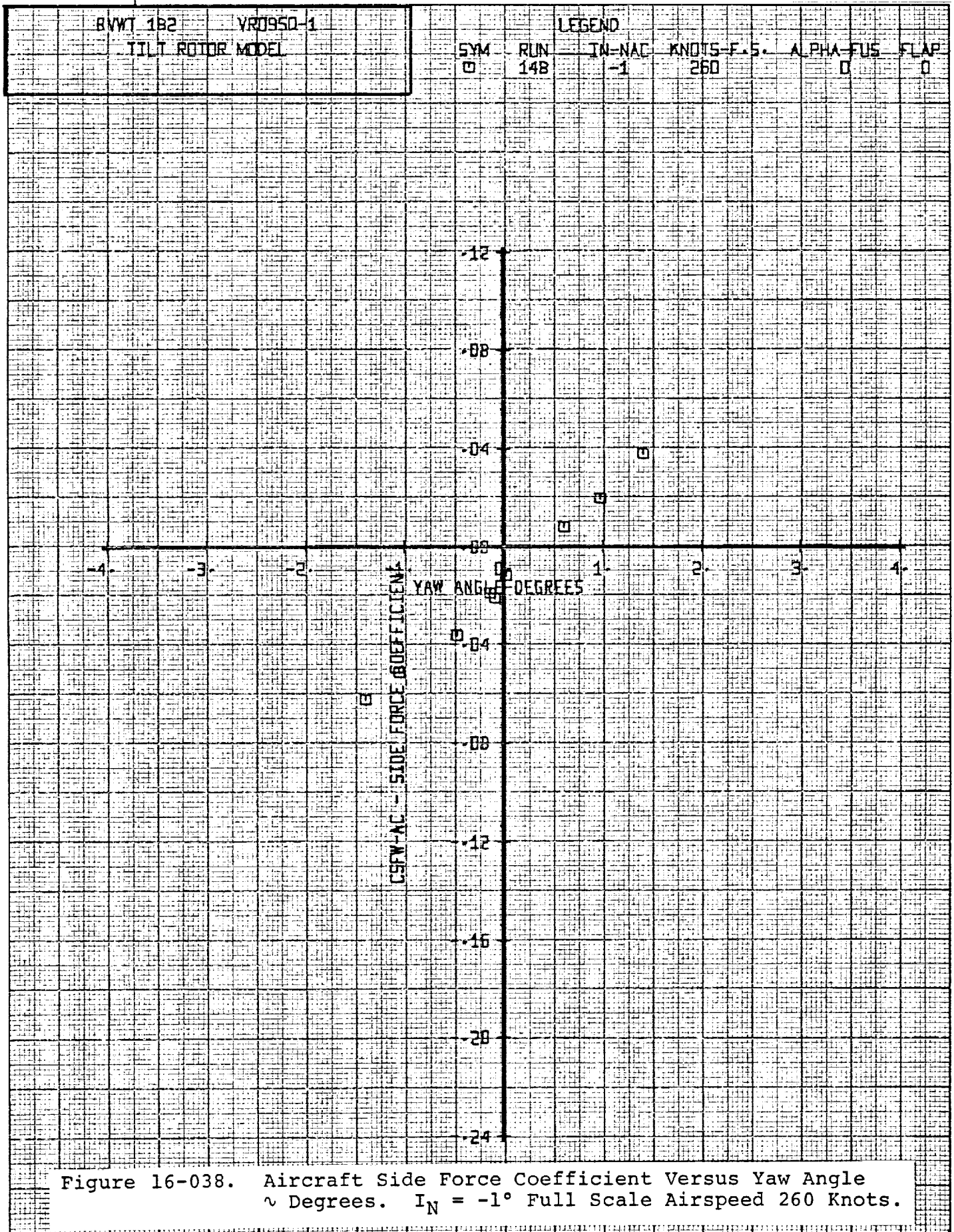
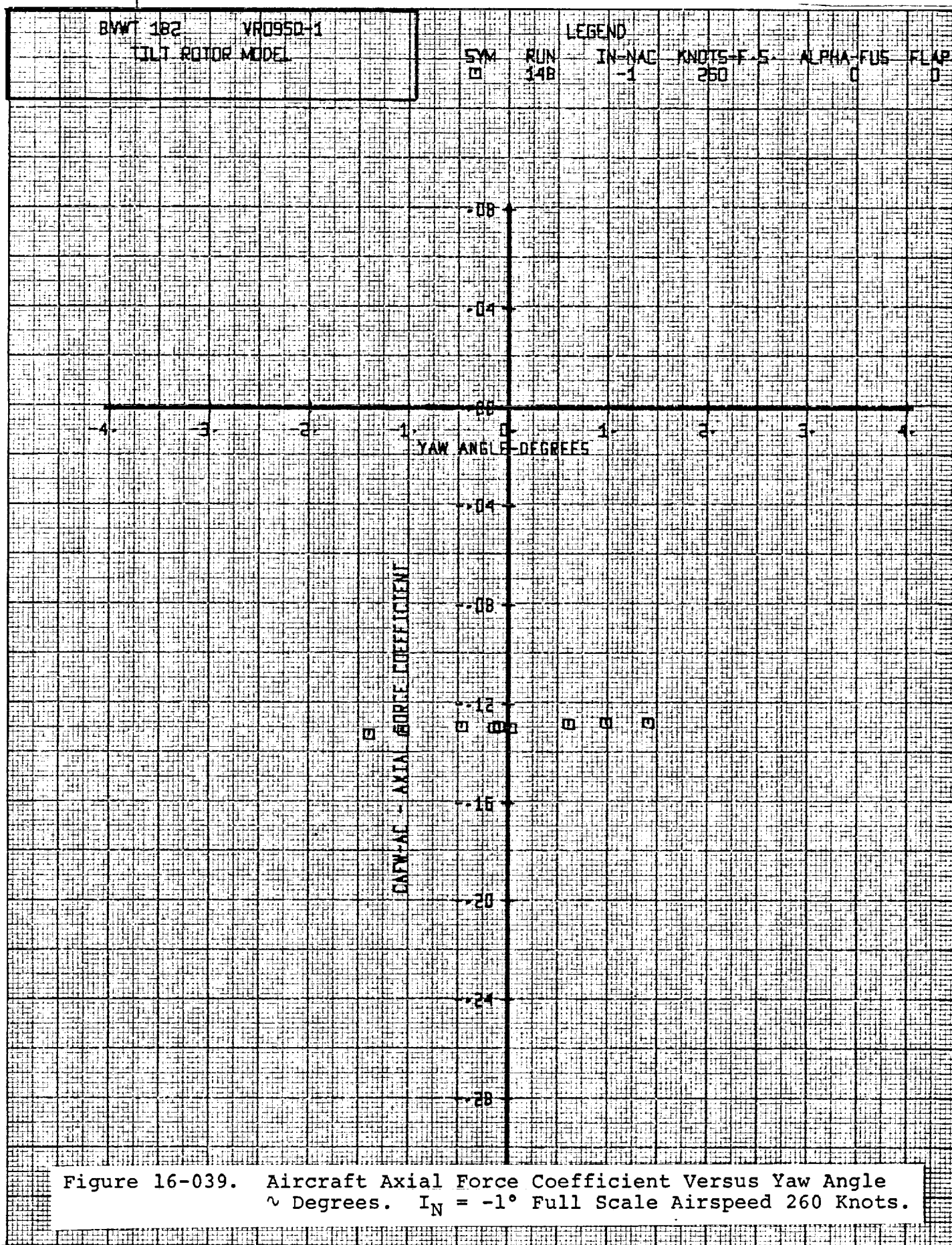


Figure 16-037. Aircraft Lift Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.





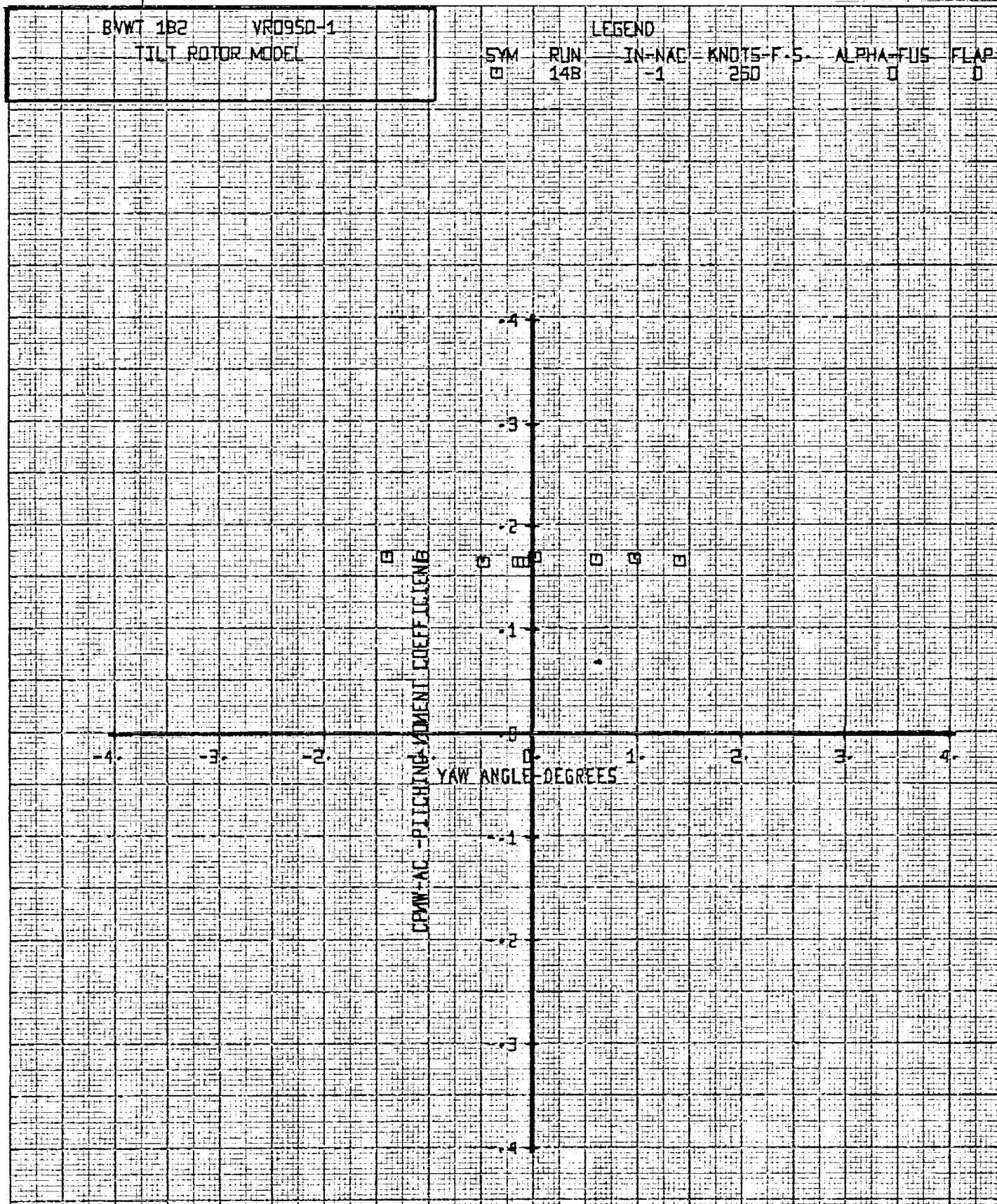


Figure 16-040. Aircraft Pitching Moment Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

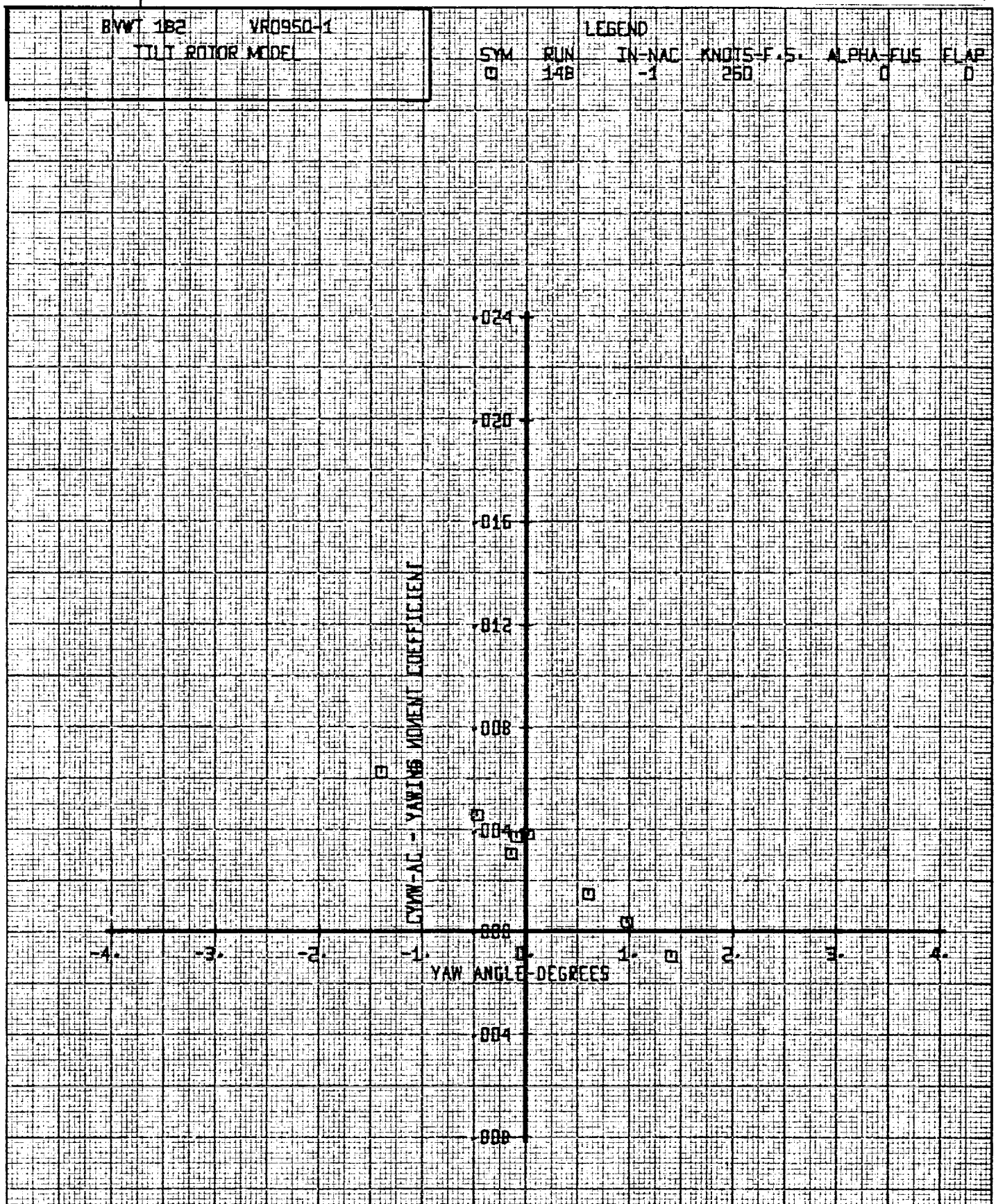


Figure 16-041. Aircraft Yawing Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

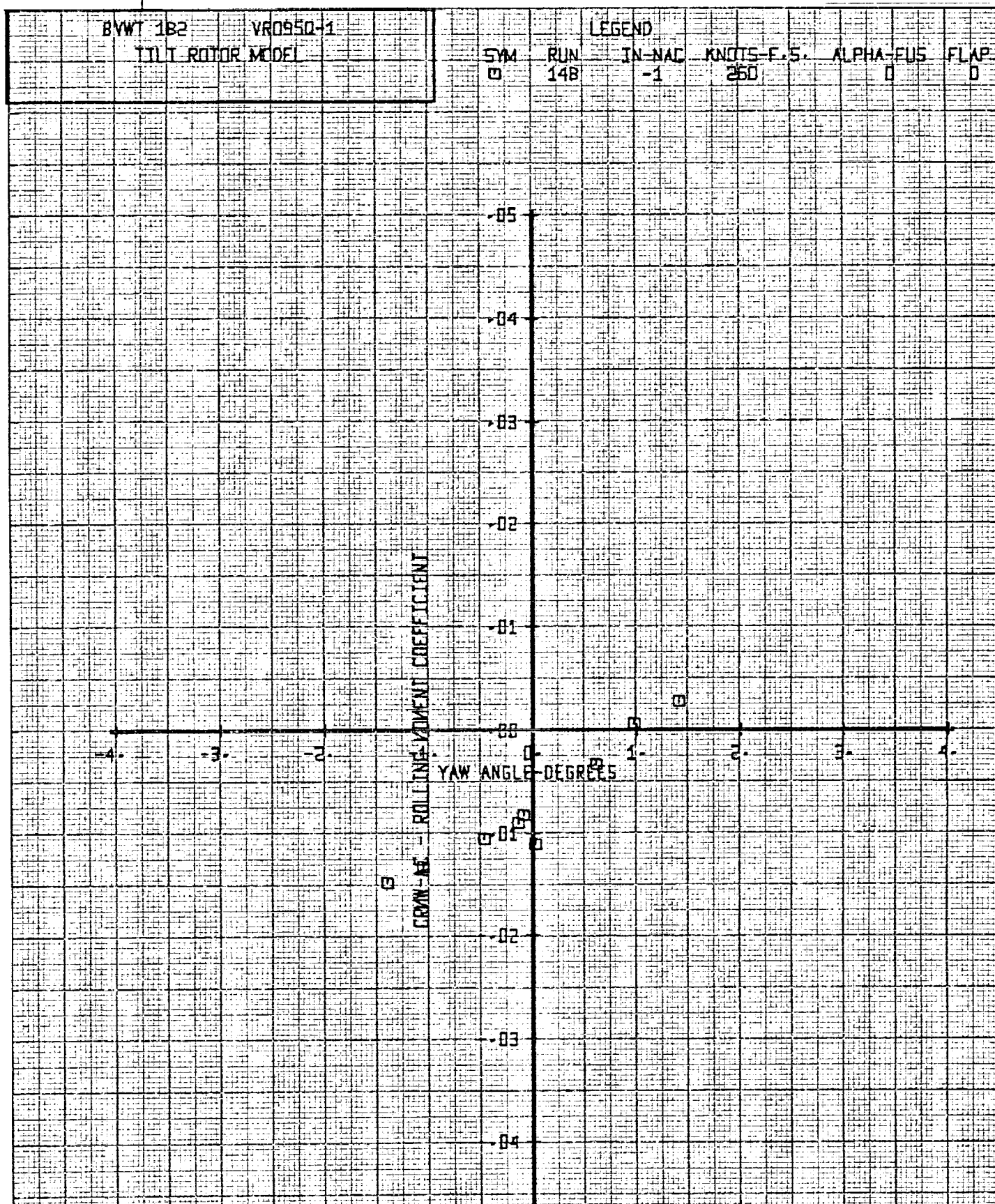


Figure 16-042. Aircraft Rolling Moment Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

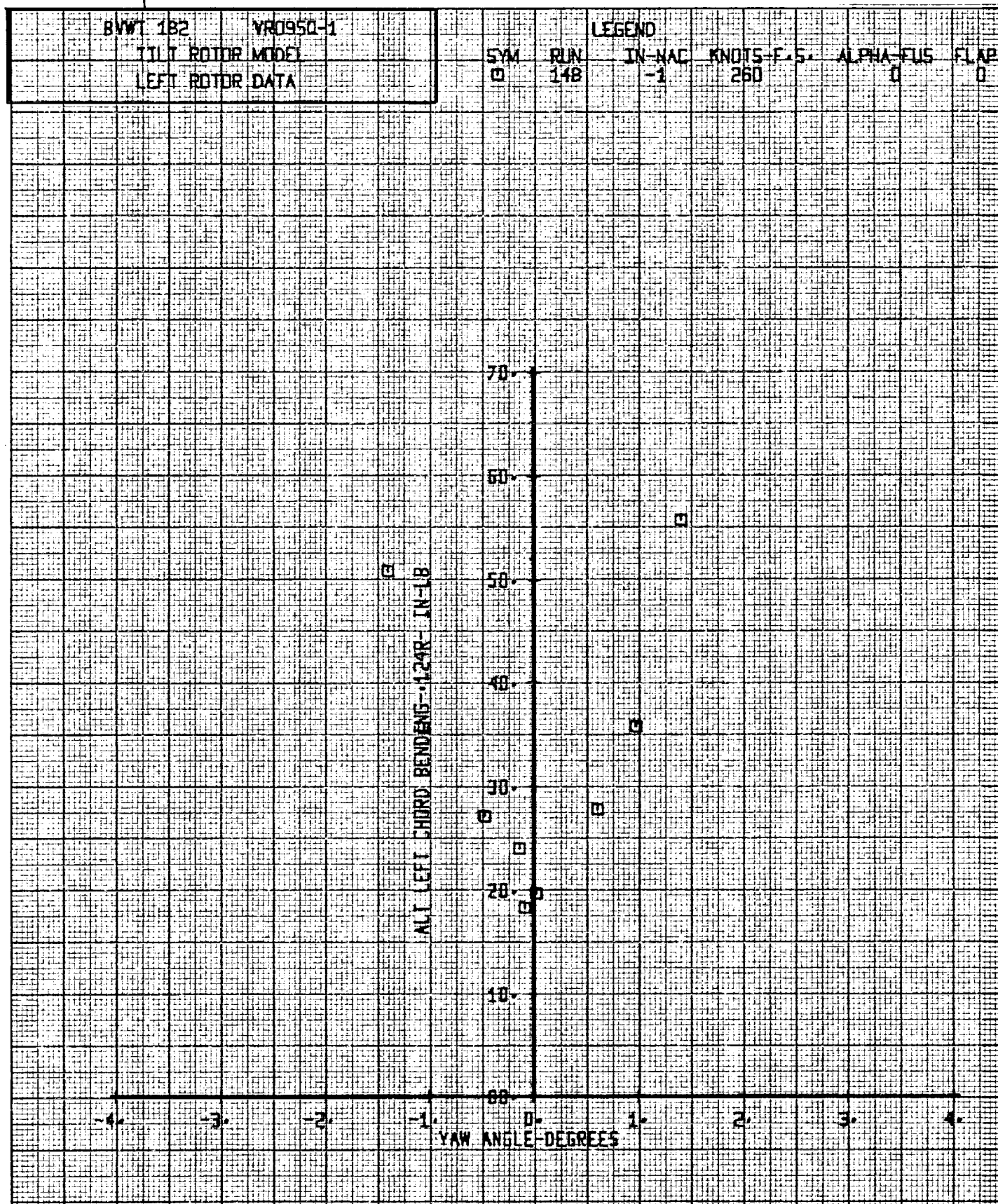


Figure 16-043. Alt. Left Chord Bending Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

SYM

RUN

LEGEND

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

148

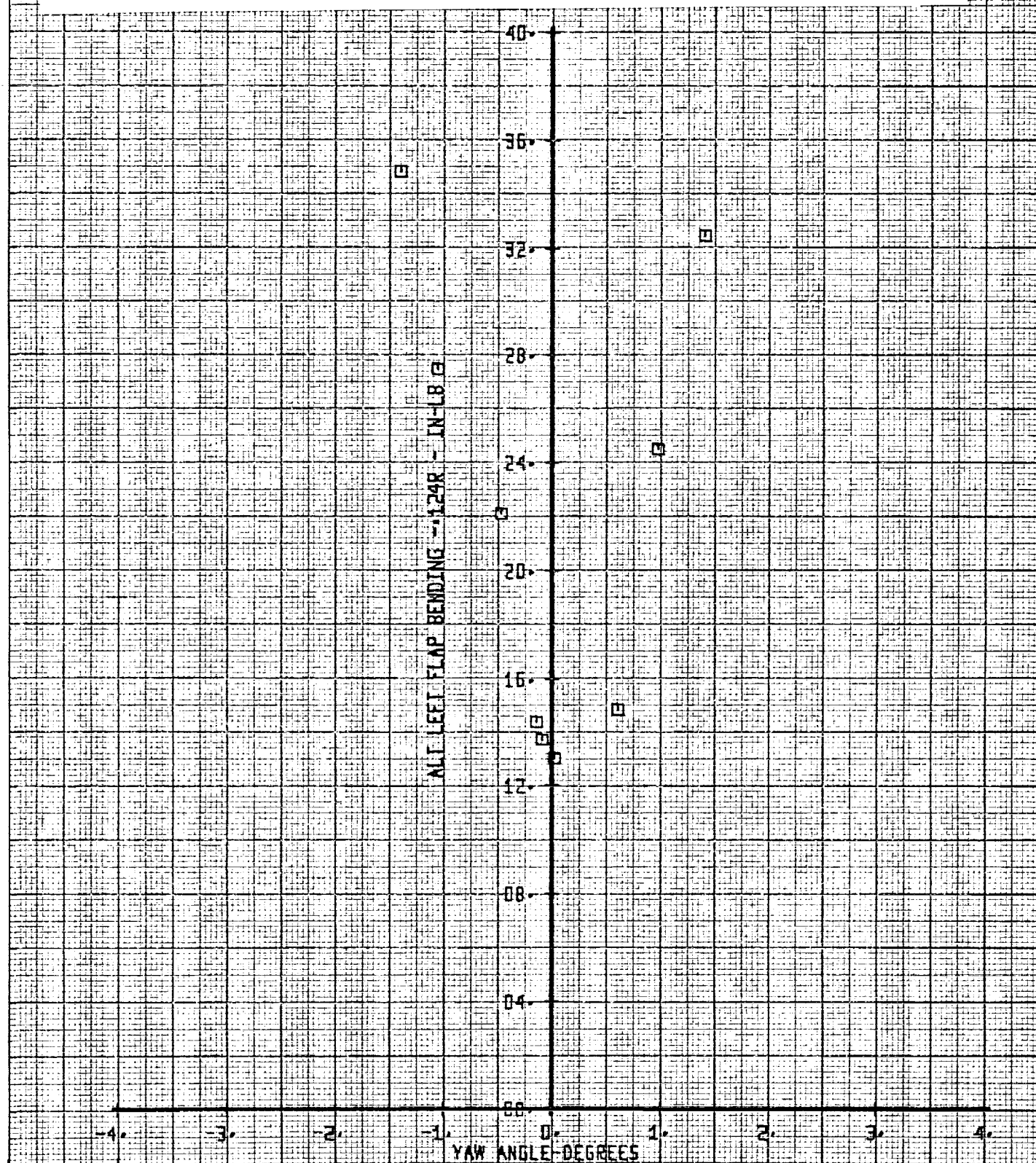
-1

260

0

0

Figure 16-044. Alt. Left Flap Bending Versus Yaw Angle γ
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



362

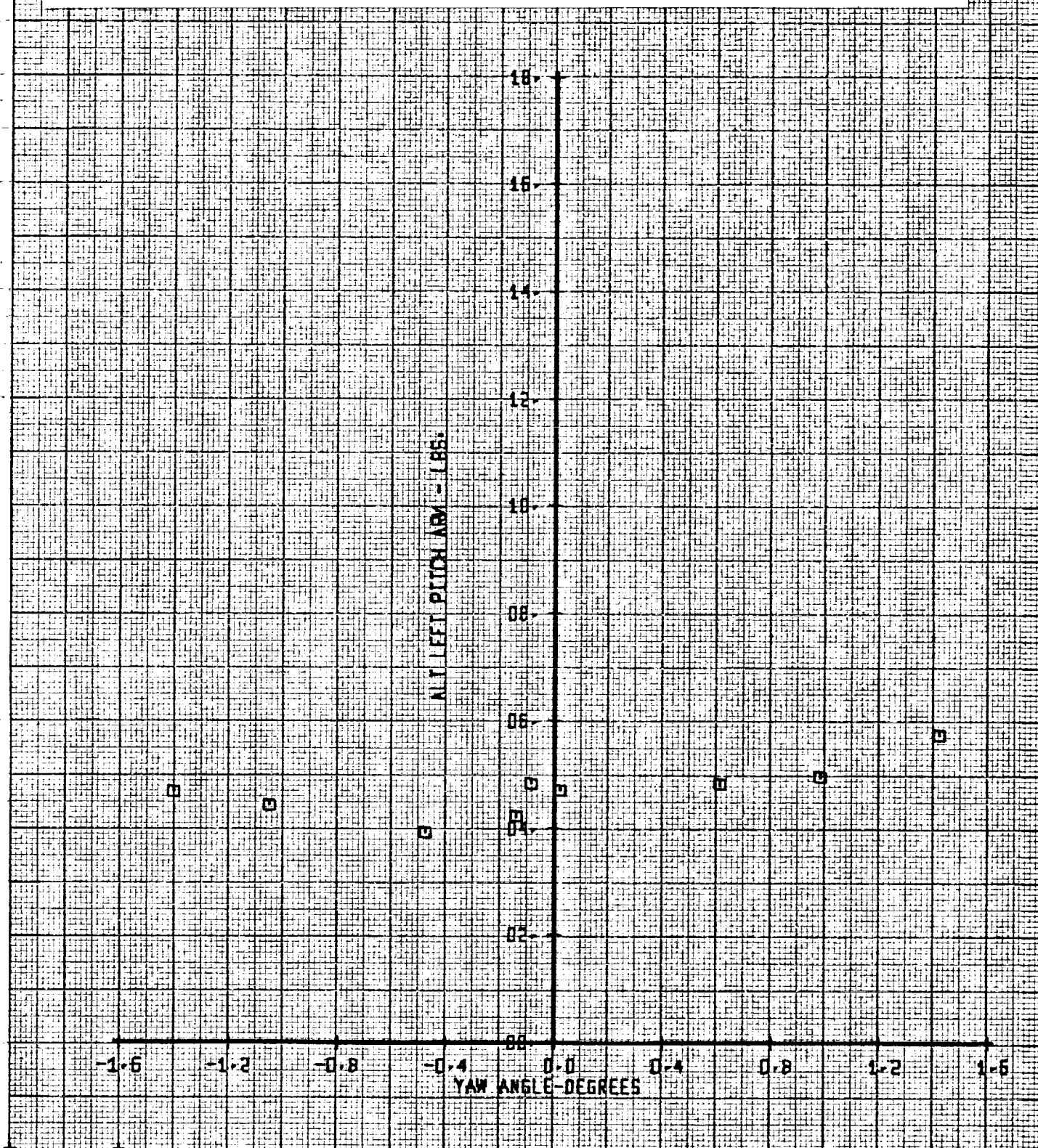
SET 100
BVWT 182

BVWT 182 VR0950-1
 TILT ROTOR MODEL
 LEFT ROTOR DATA

LEGEND

SYM RUN IN-MAC KNOTS-F.S. ALPHA-FUS FLAP
 0 148 -1 260 0 0

Figure 16-045. Alt. Left Pitch Link Load Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



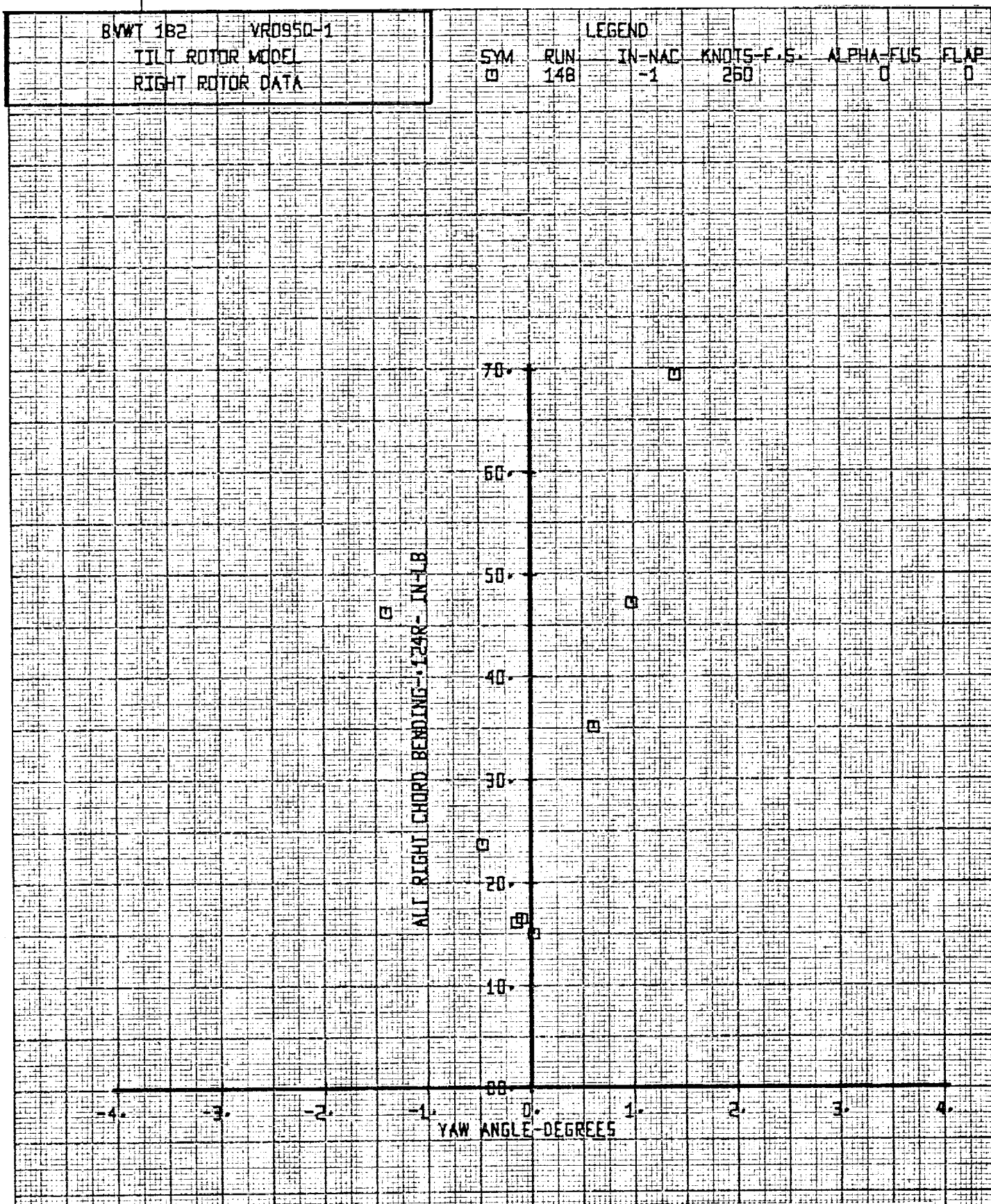
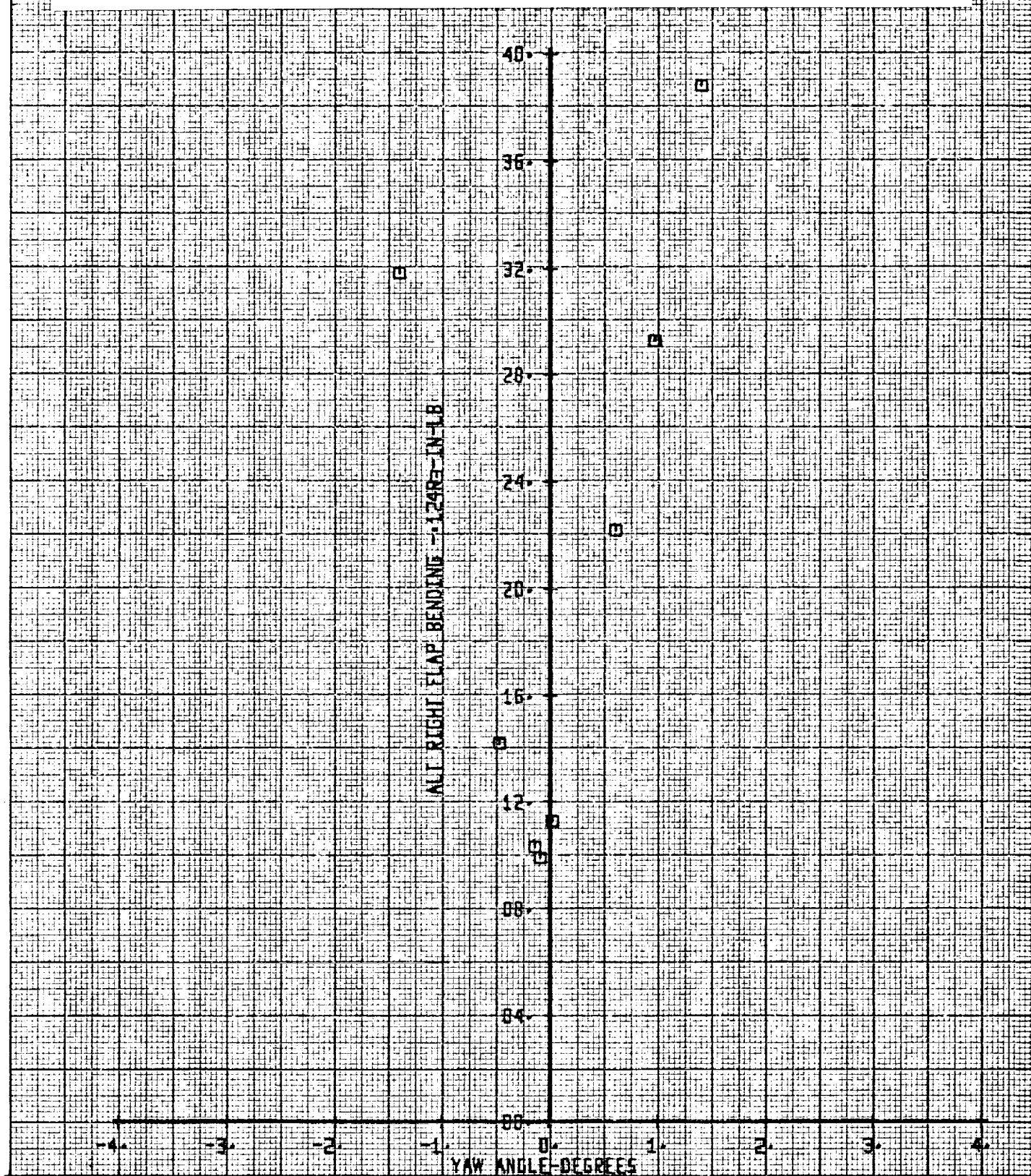


Figure 16-046. Alt. Right Chord Bending Versus Yaw Angle ~
 Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

BWWT 182 YR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 148 -1 260 0 0

Figure 16-047. Alt. Right Flap Bending Versus Yaw Angle γ
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



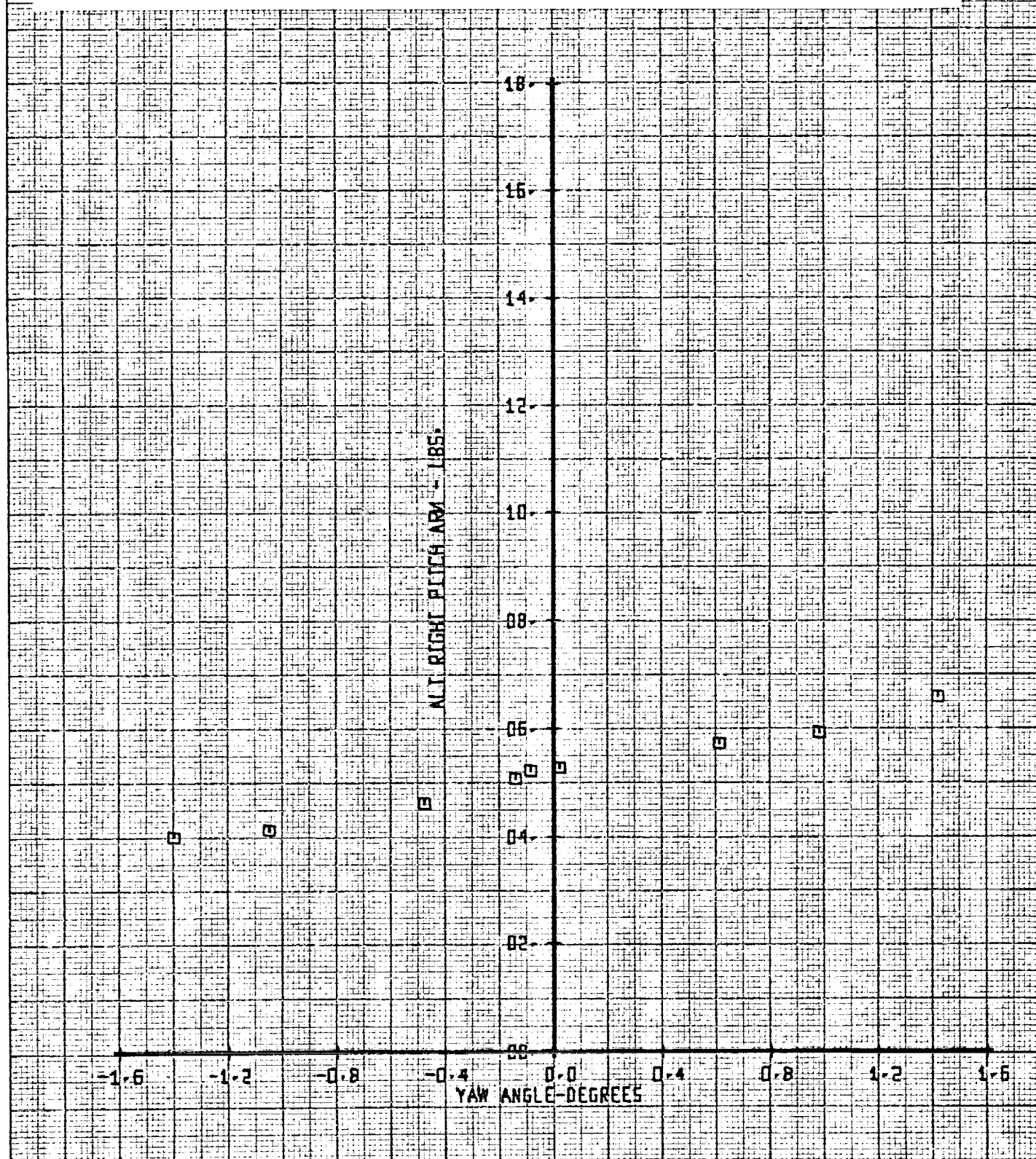
BVWT 182 VR0950-1

TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.F.	ALPHA-FUS	FLAP
□	148	-1	260	0	0

Figure 16-048. Alt. Right Pitch Link Load Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



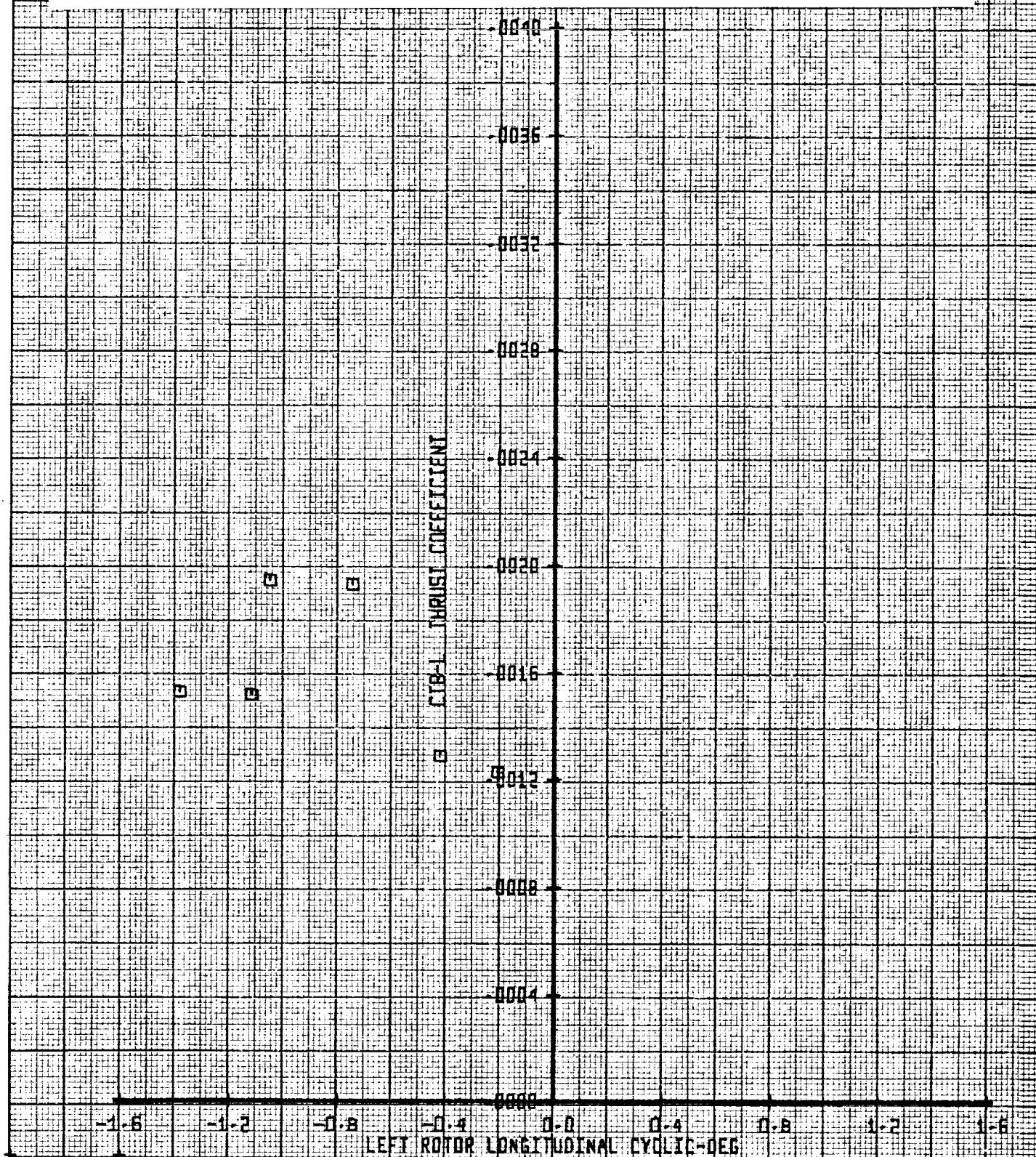
366

SET 100
BVWT 182

BYWT 182 VR0950-1
TILT ROTOR MODEL
LEFT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 150 -1 260 0 0

Figure 16-049. Left Rotor Thrust Coefficient Versus Left Rotor Long. Cyclic δ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 260 Knots.



BVWT 182 VR095Q-1

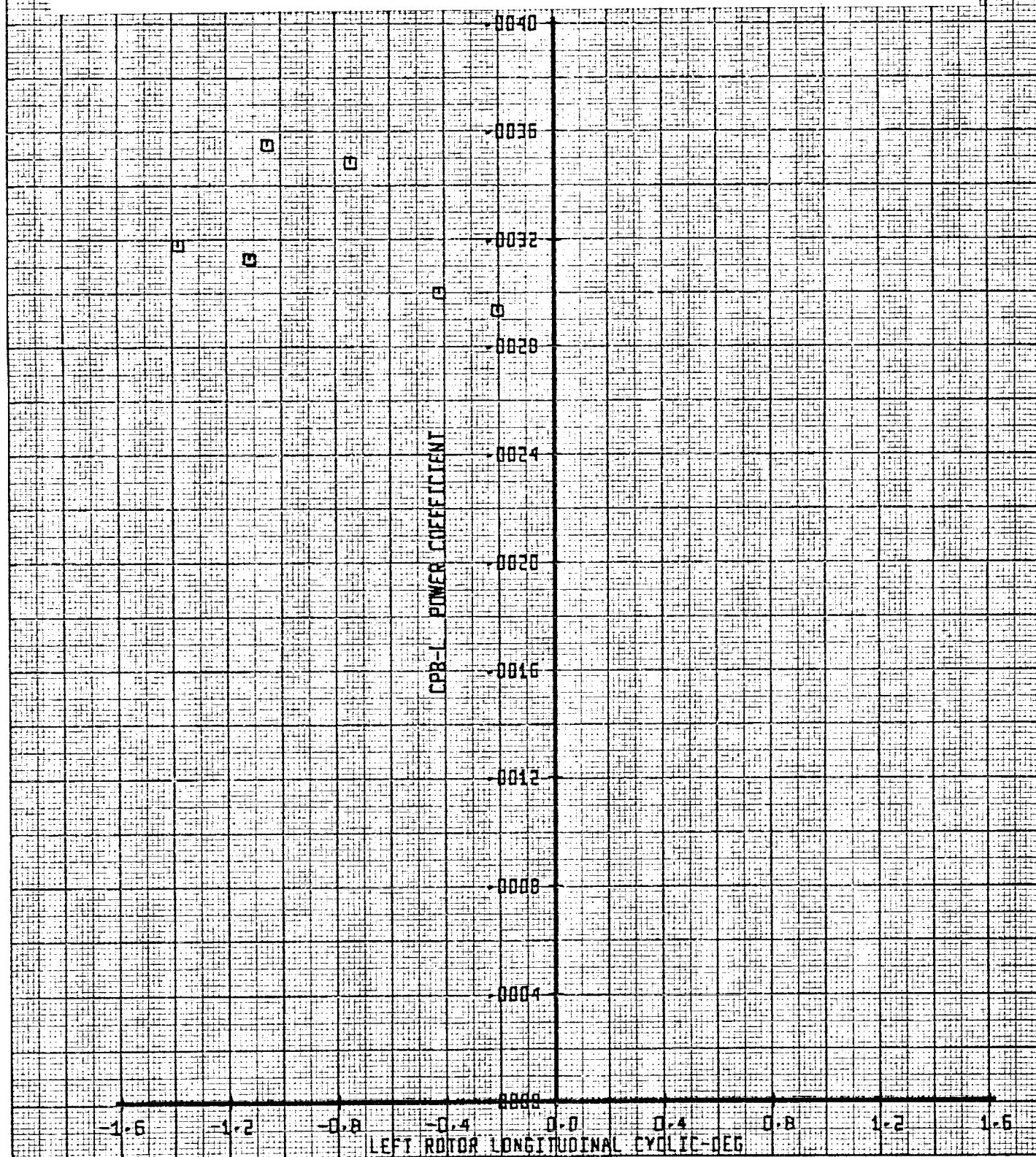
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.F.	ALPHA-FUS	FLAP
□	150	-1	260	0	0

Figure 16-050. Left Rotor Power Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 260 Knots.



368

 SET 102
 BVWT 182

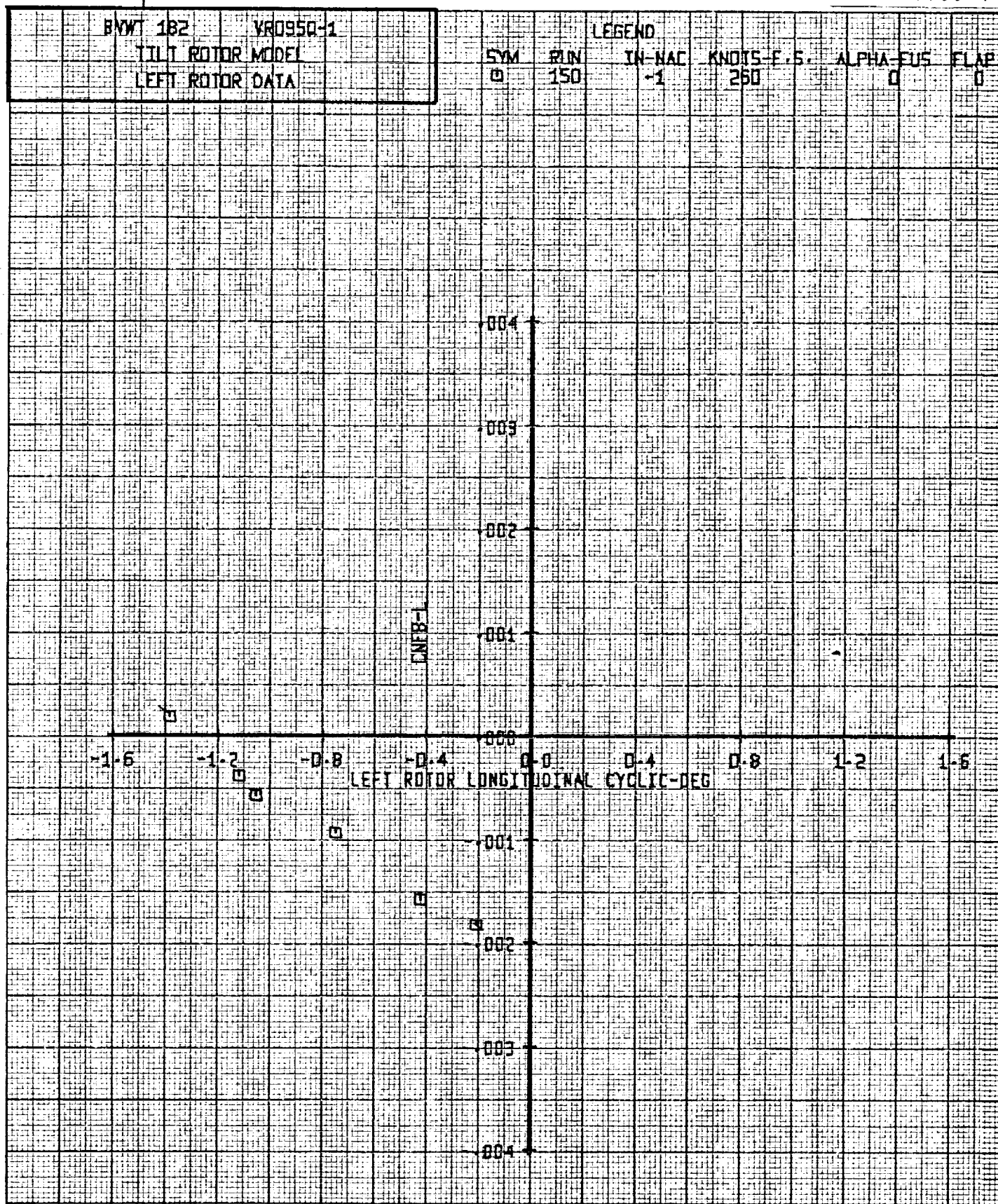


Figure 16-051. Left Rotor Normal Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

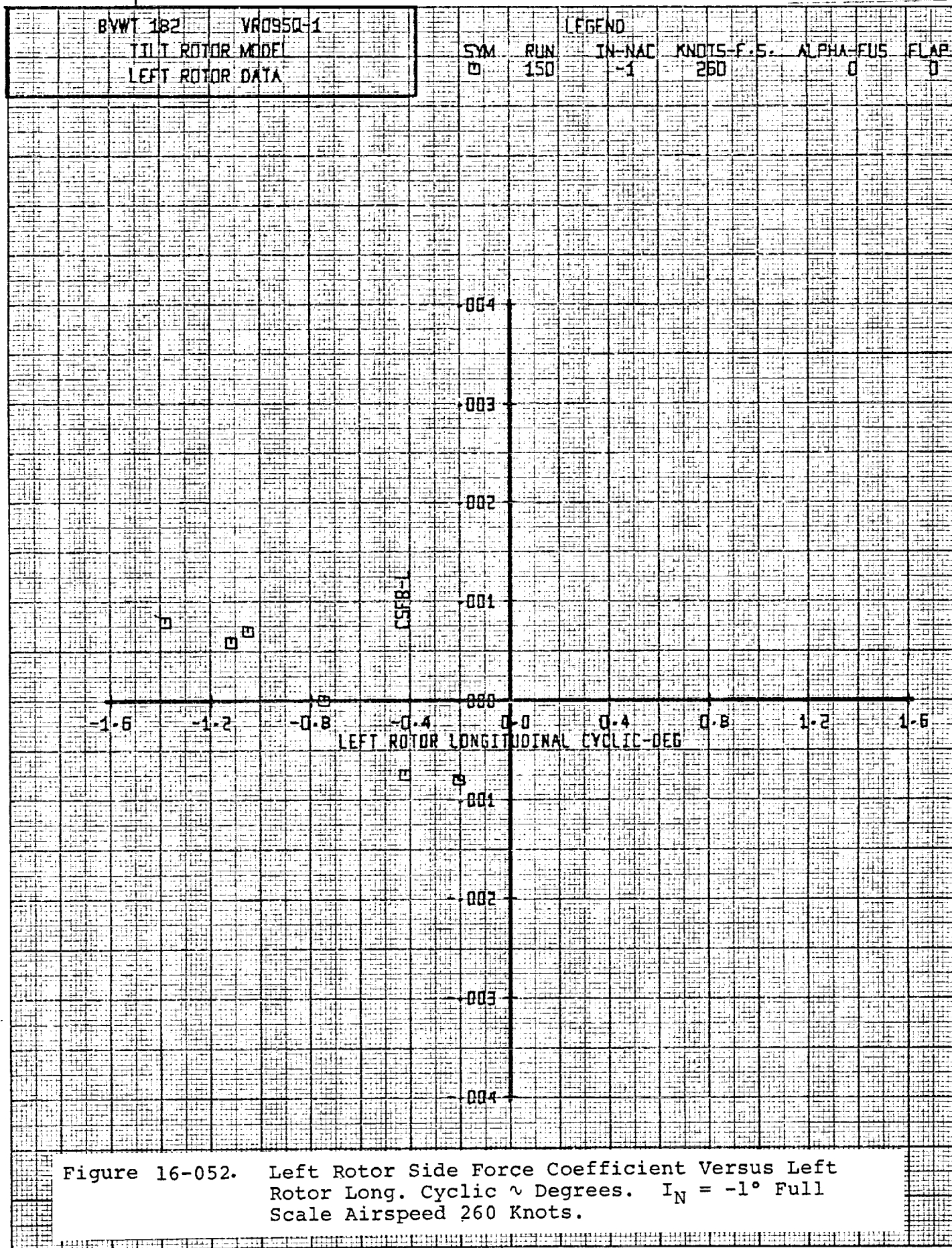


Figure 16-052. Left Rotor Side Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

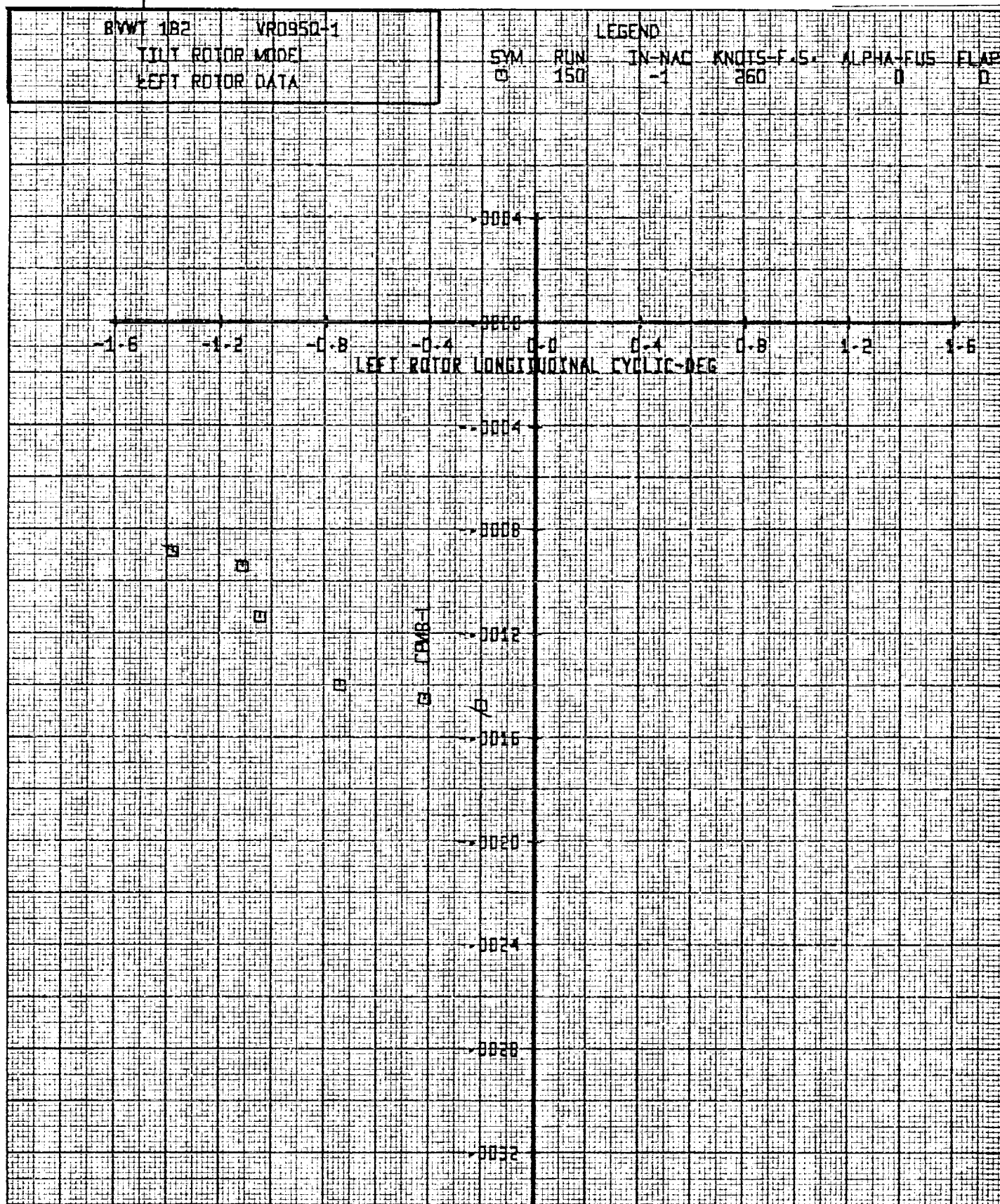
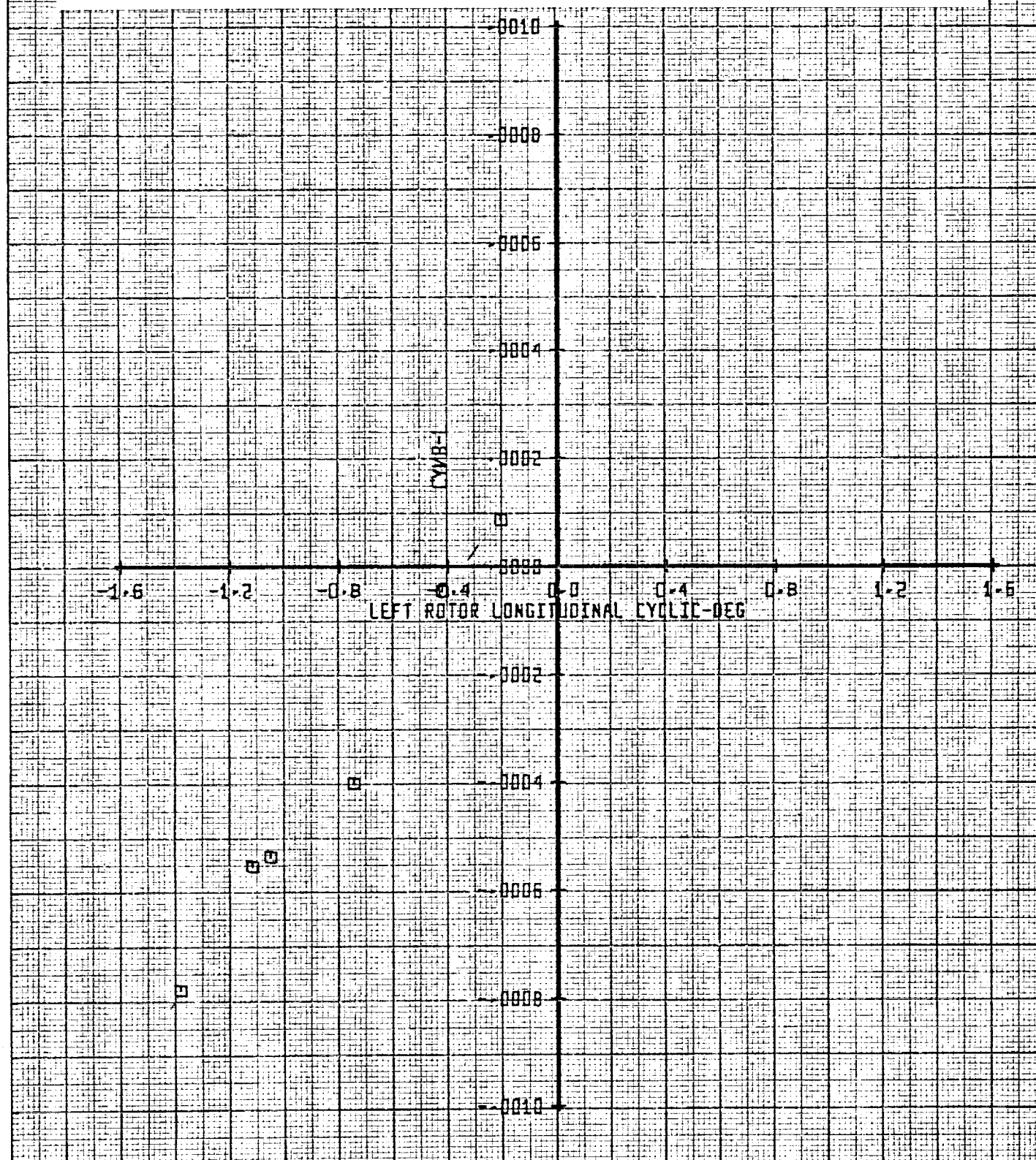


Figure 16-053. Left Rotor Pitching Moment Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

BVWT 182		VR0950-1		LEGEND					
TIT T ROTOR MODEL				SYM	RUIN	TN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
LEFT ROTOR DATA				0	150	-1	250	0	0

Figure 16-054. Left Rotor Yawing Moment Versus Left Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



BVWT 182 VR095Q-1

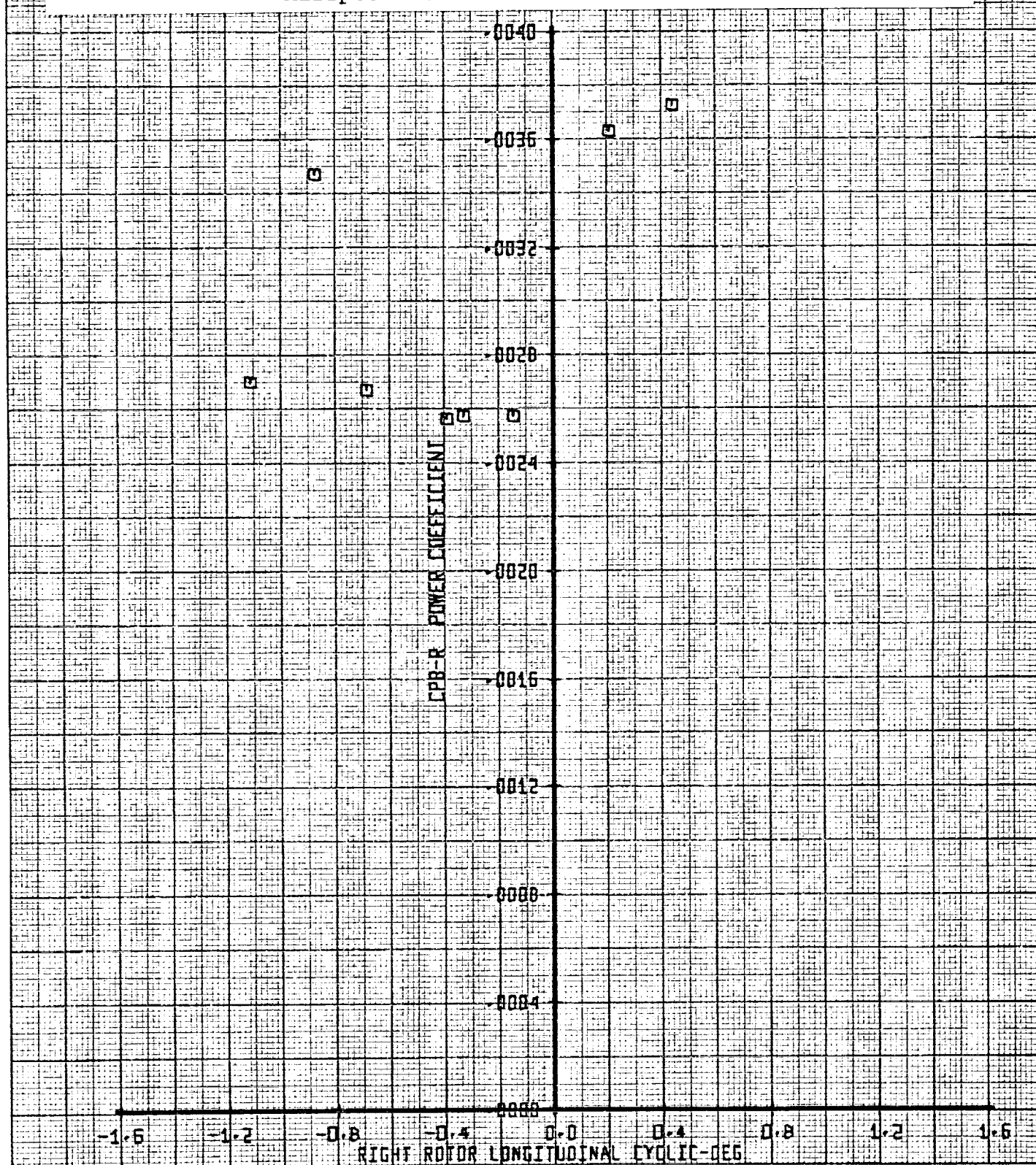
TILT ROTOR MODEL

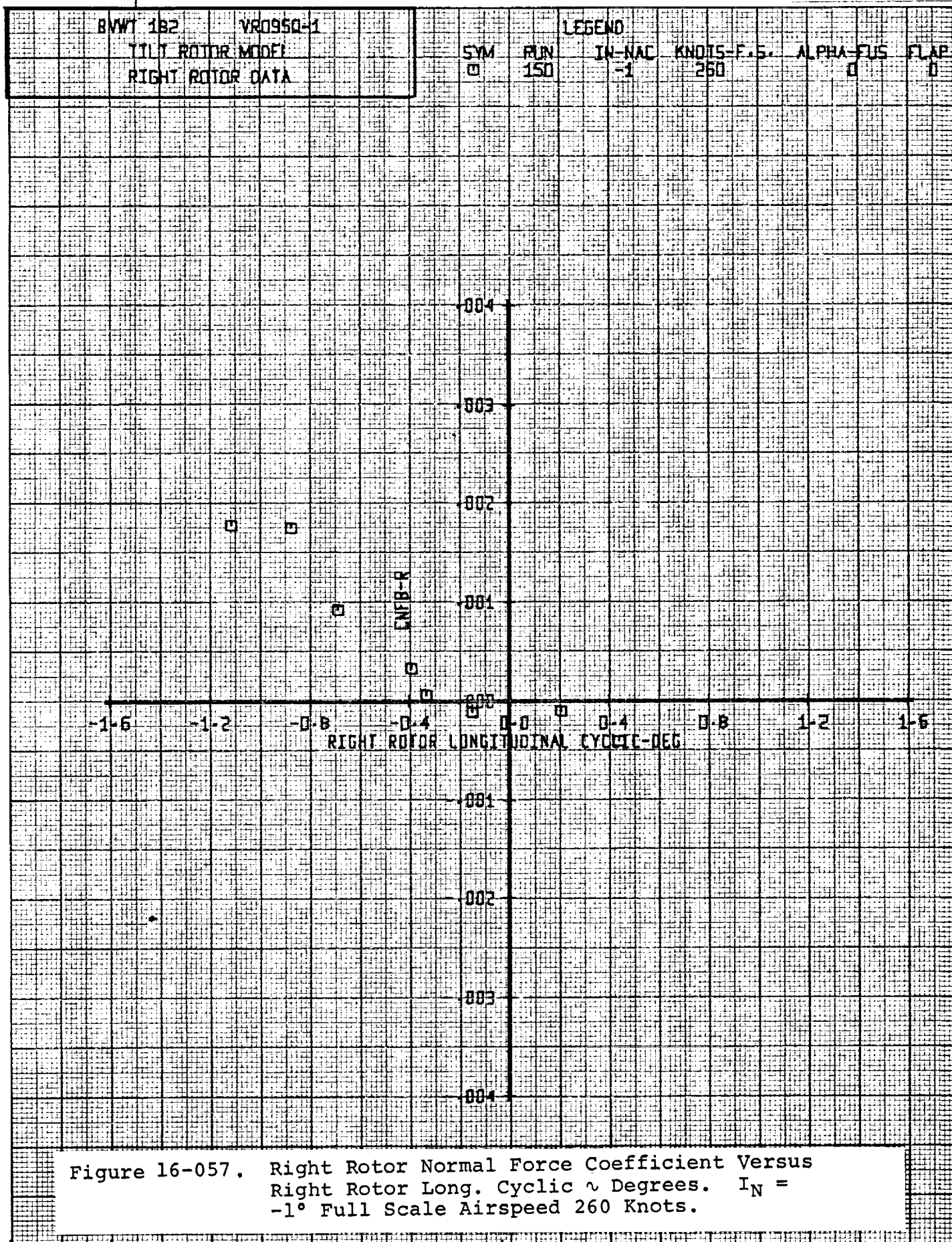
RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	150	-1	260	0	0

Figure 16-056. Right Rotor Power Coefficient Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 260 Knots.





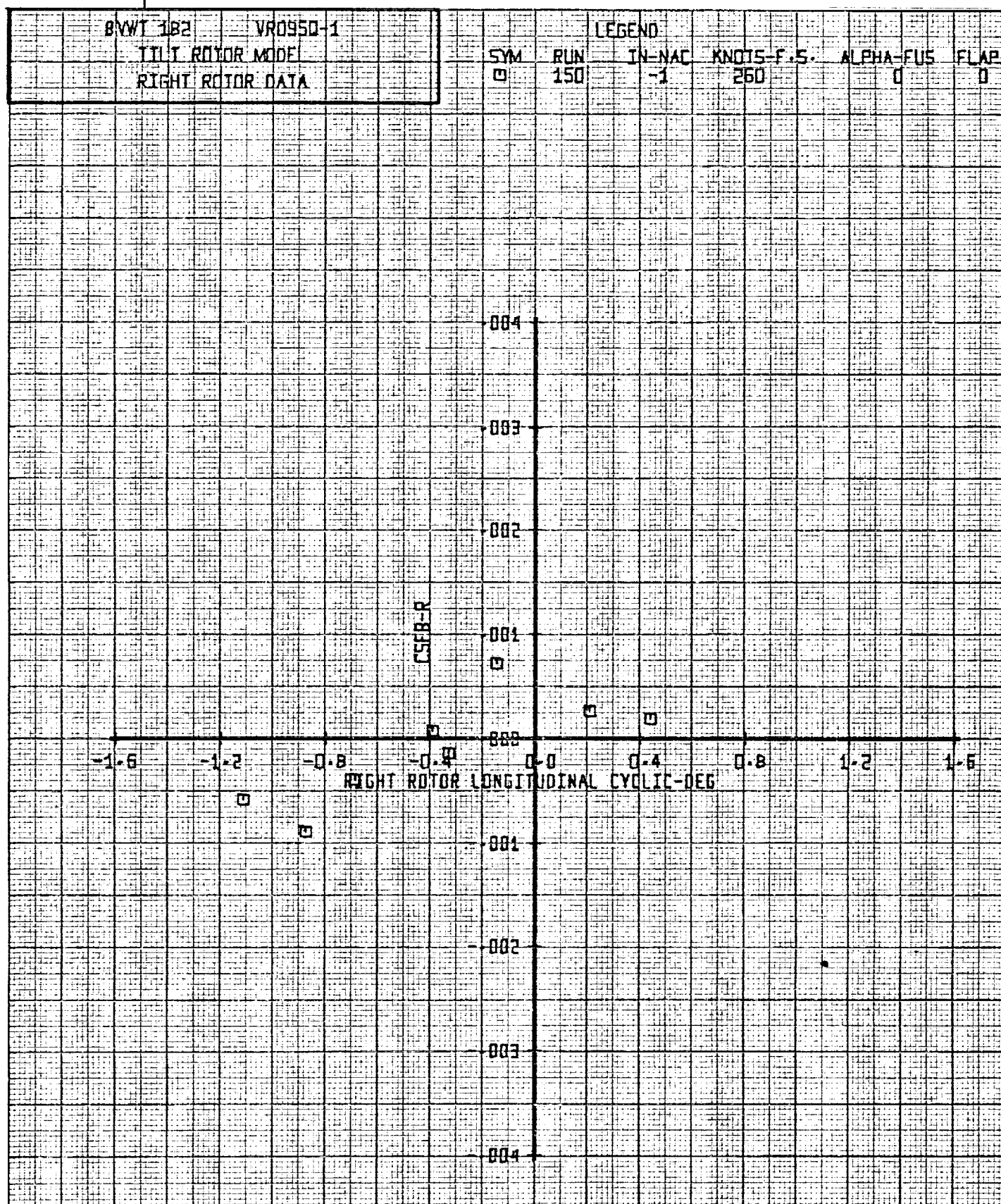


Figure 16-058. Right Rotor Side Force Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

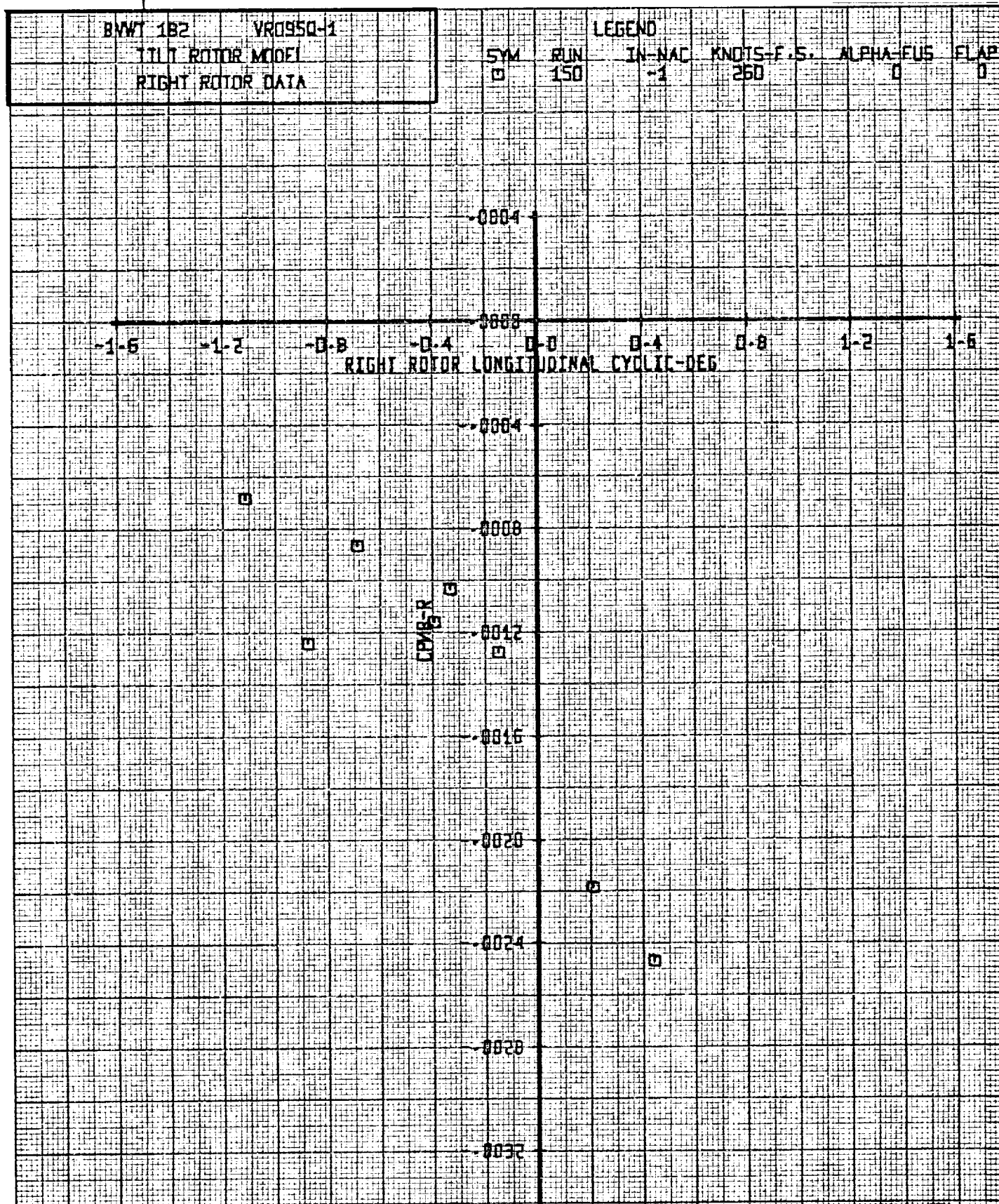


Figure 16-059. Right Rotor Pitching Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

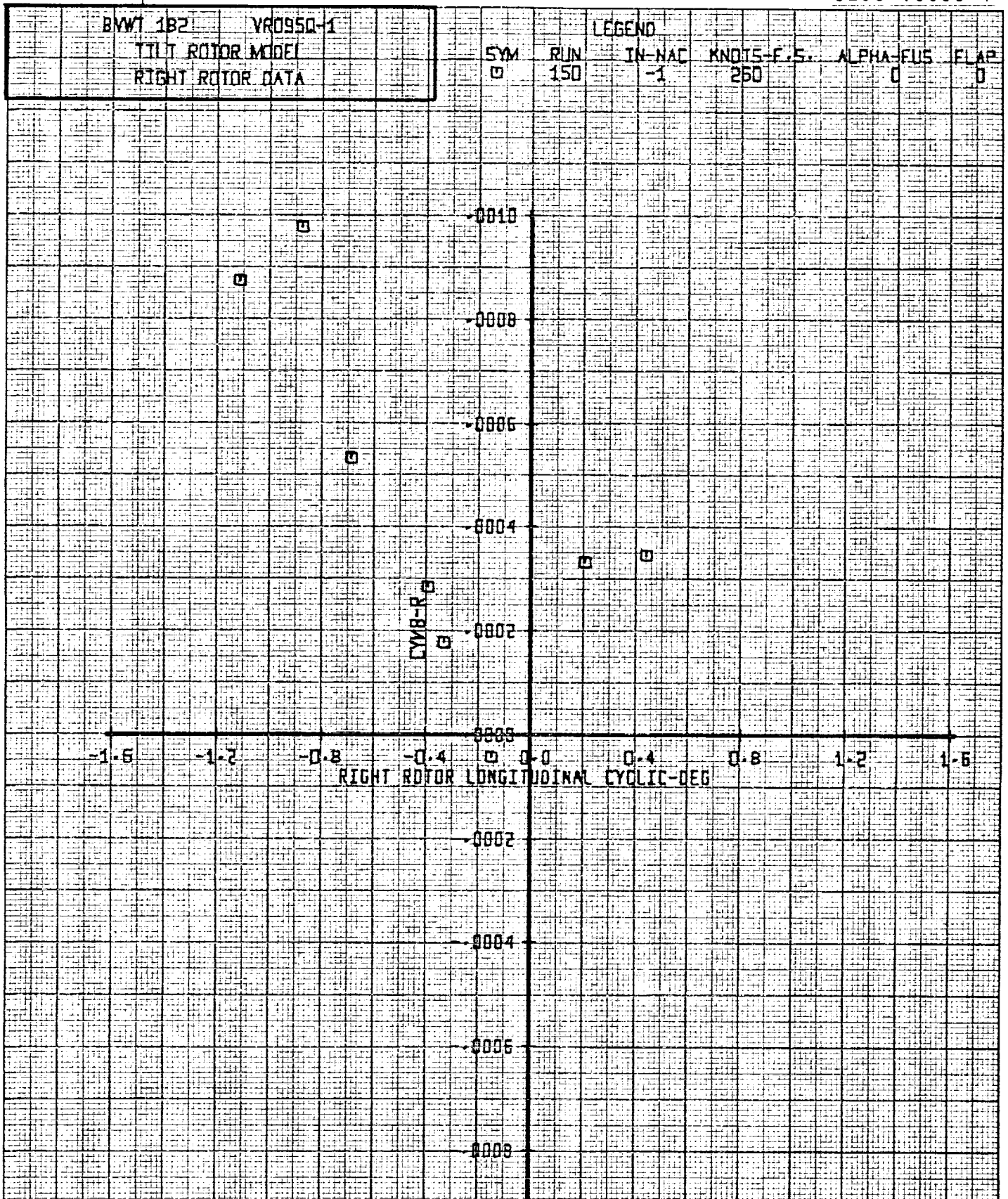


Figure 16-060. Right Rotor Yawing Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

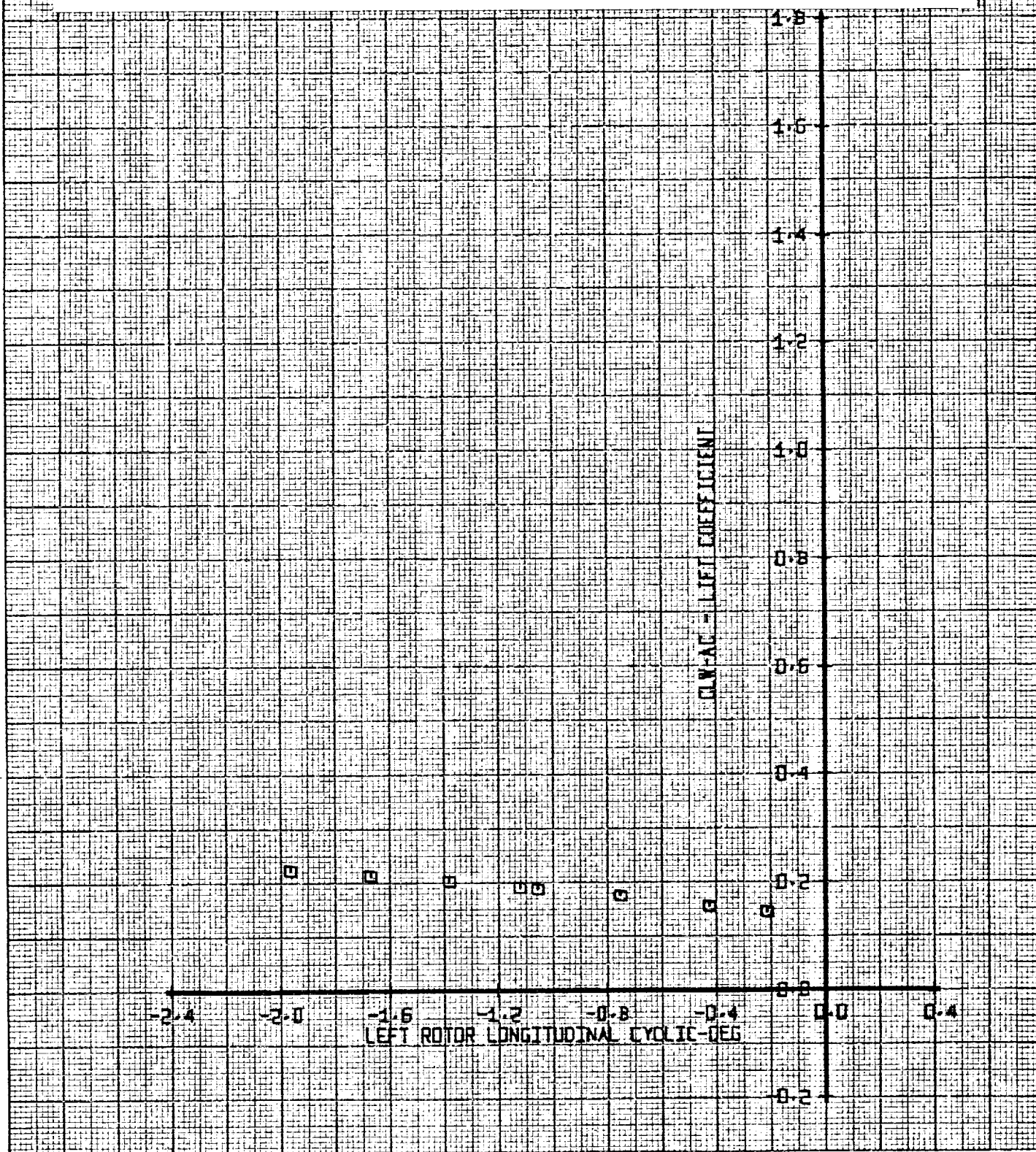
BNWT 182 YR0950-1

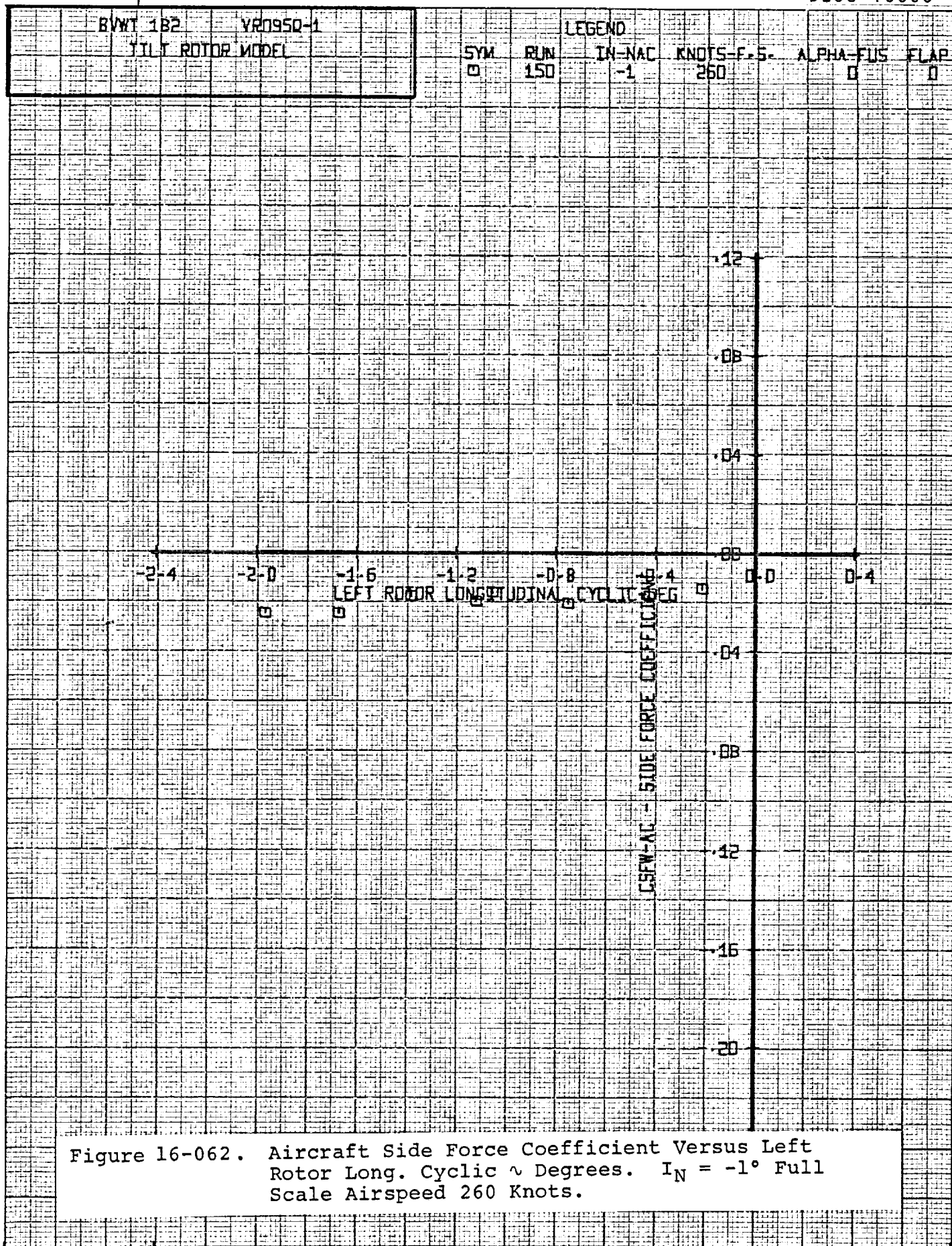
TILT ROTOR MODEL

LEGEND

SYM
□RUN
150IN-NAC
-1KNOTS-F.S.
260ALPHA-FUS
0FLAP
0

Figure 16-061. Aircraft Lift Coefficient Versus Left Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.





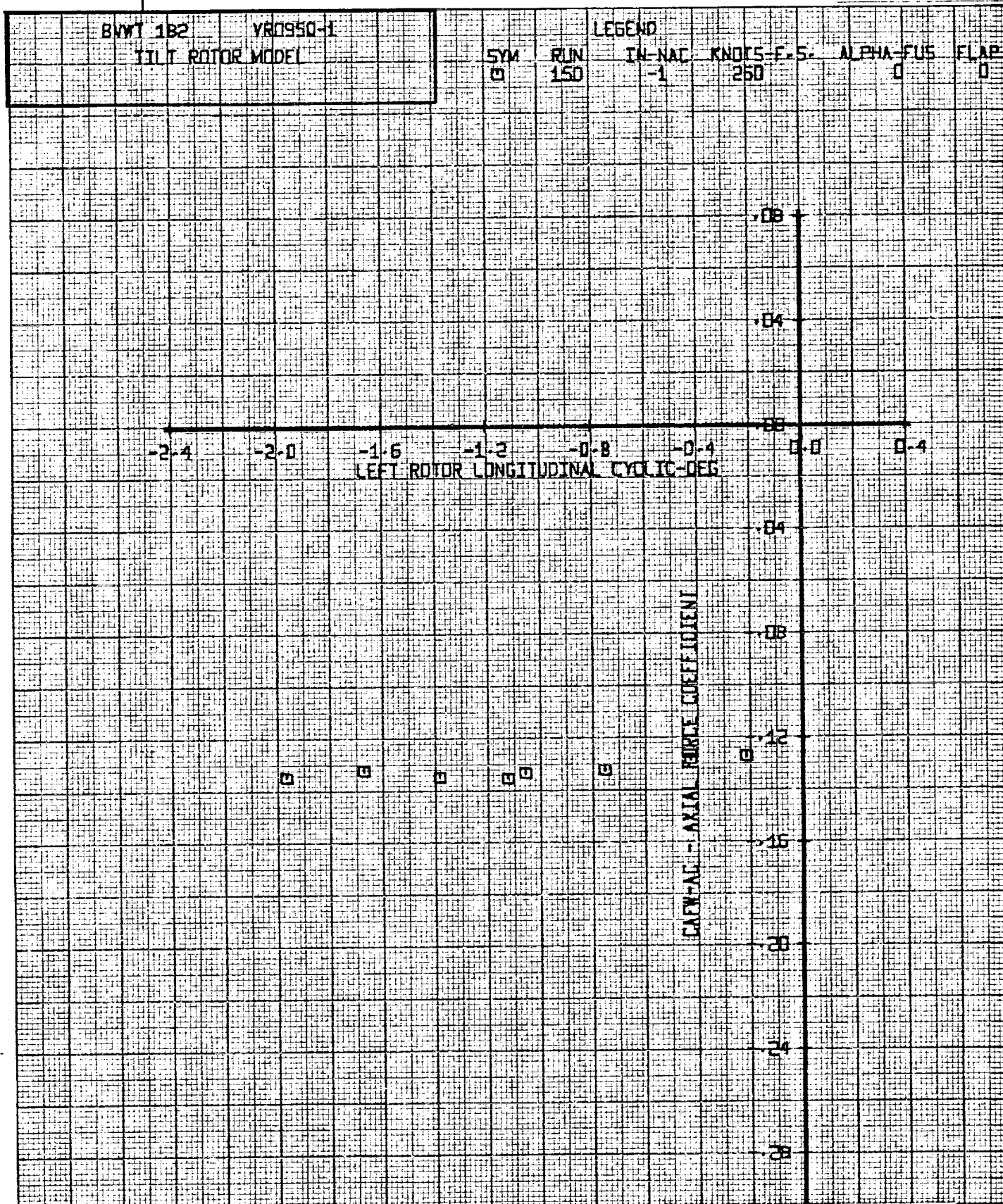


Figure 16-063. Aircraft Axial Force Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

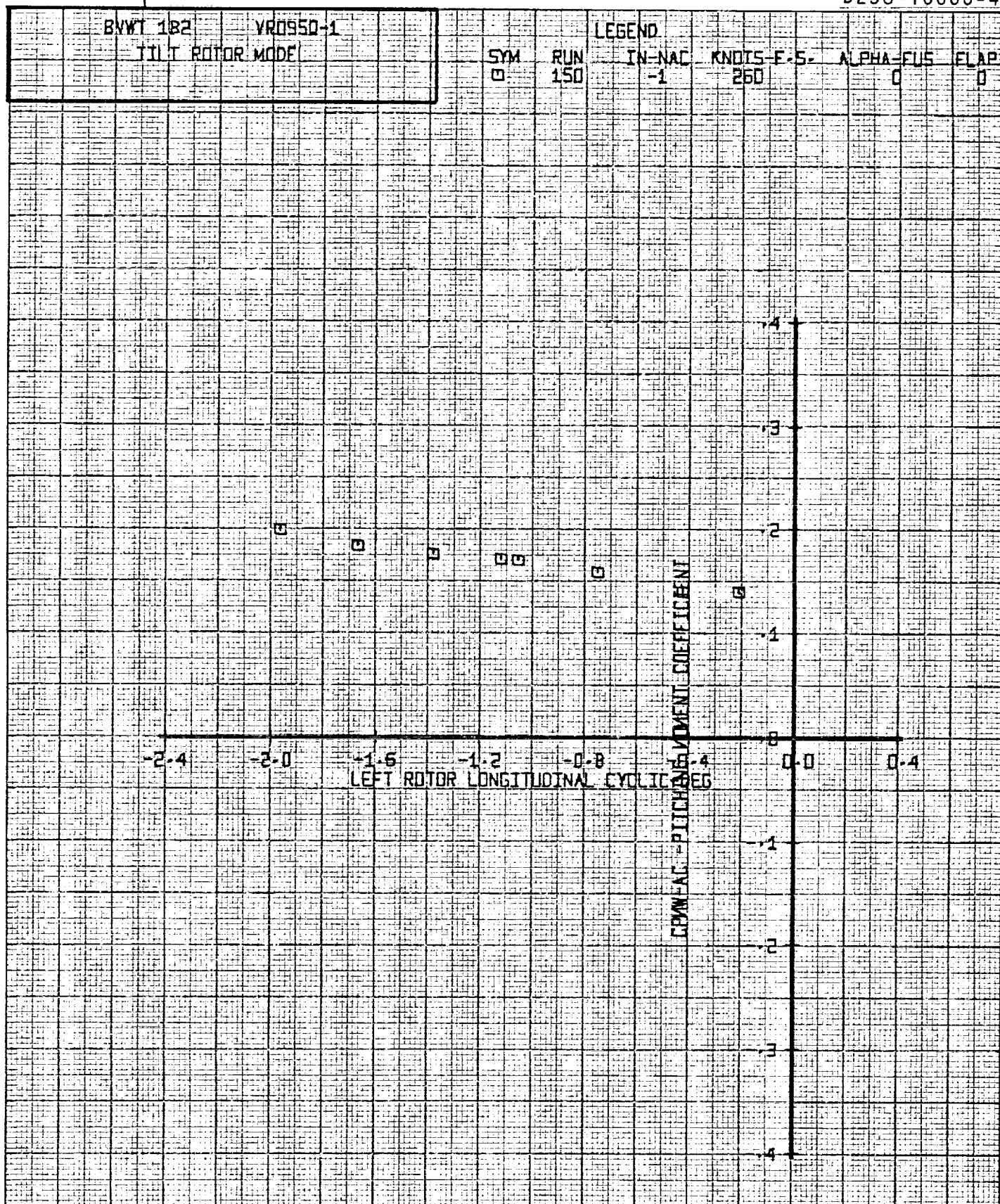


Figure 16-064. Aircraft Pitching Moment Coefficient Versus Left Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

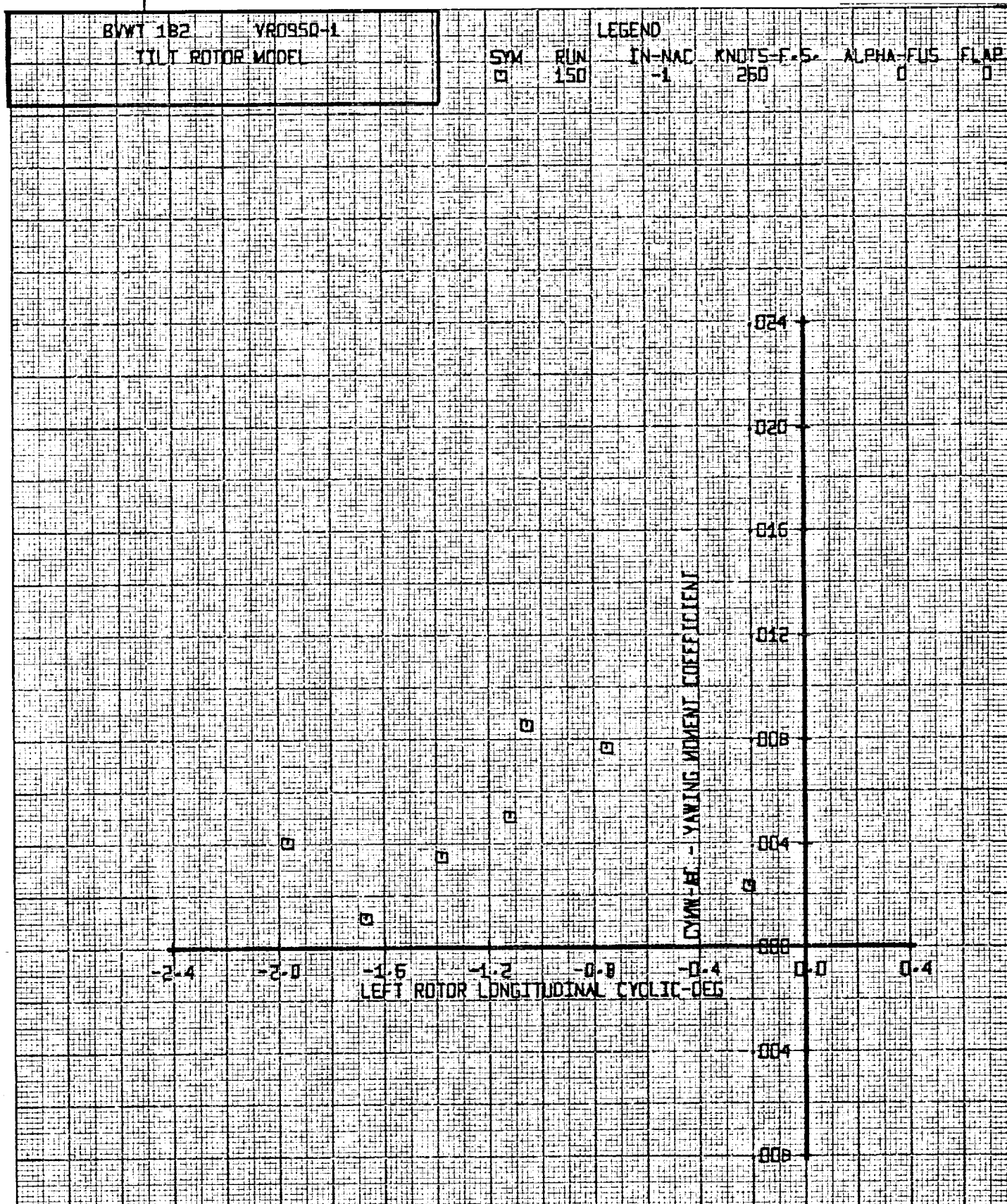


Figure 16-065. Aircraft Yawing Moment Coefficient Versus Left Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

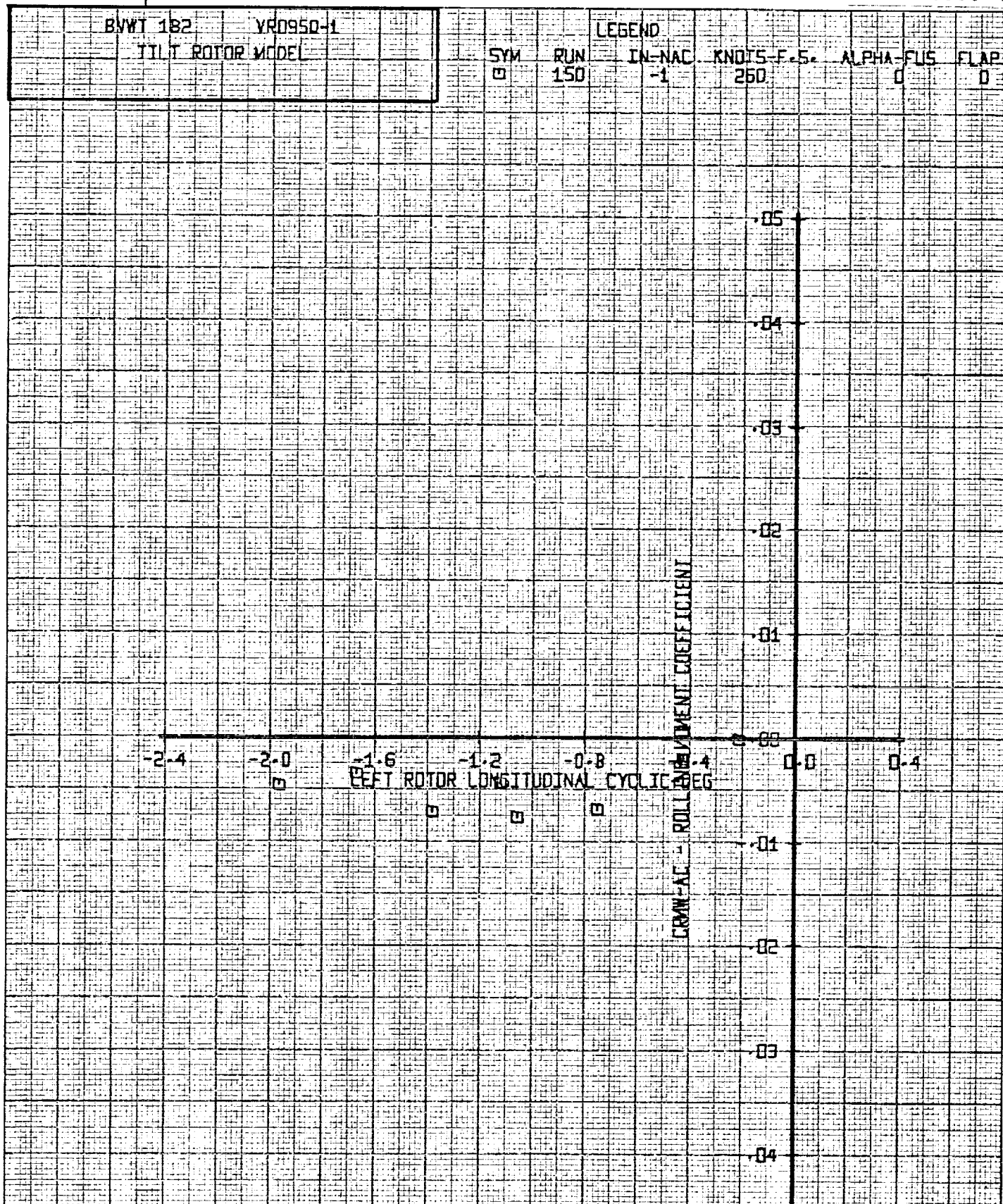
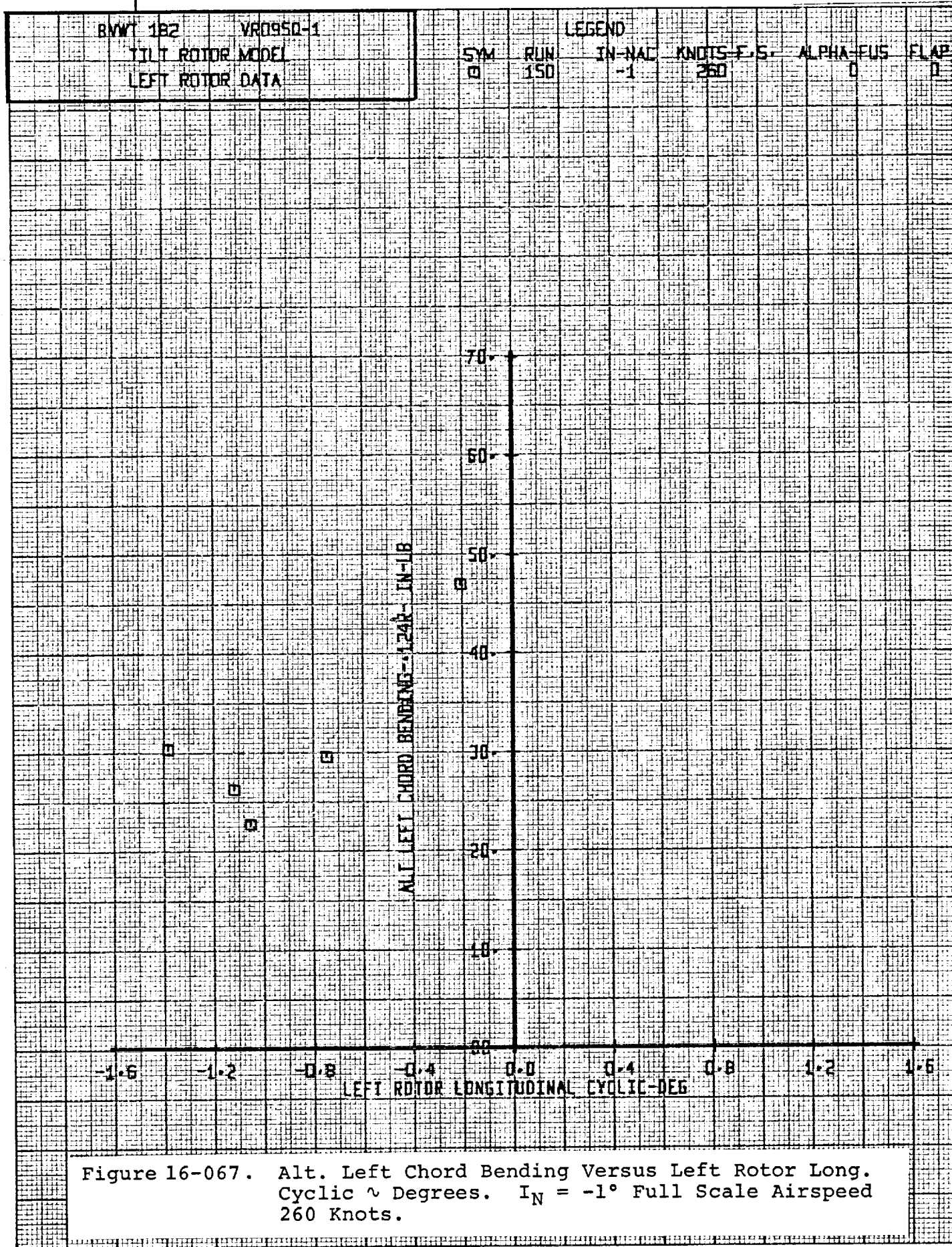


Figure 16-066. Aircraft Rolling Moment Coefficient Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



385

 SET 102
 BWVT 182

BVWT 1B2 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

150

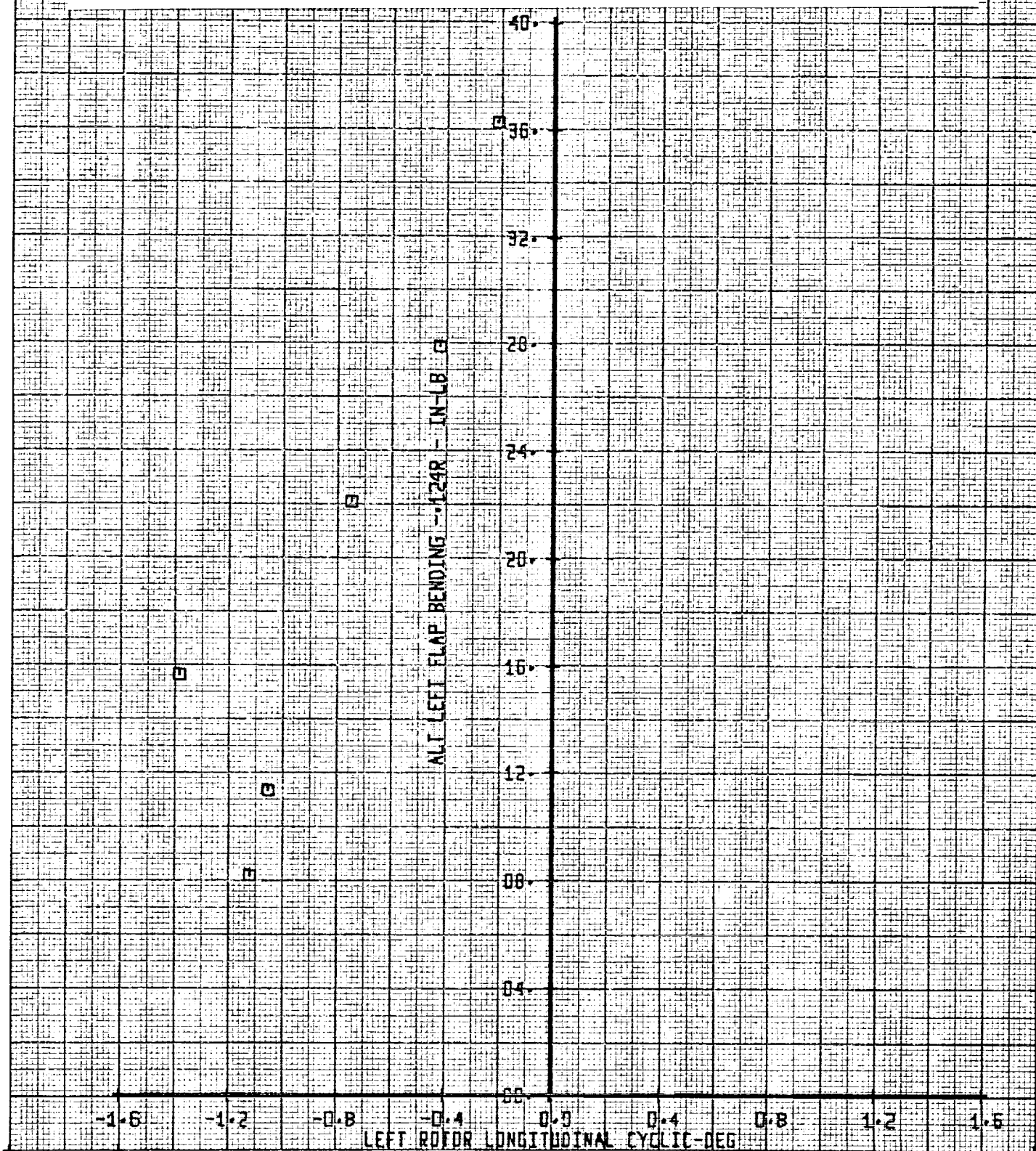
-1

260

0

0

Figure 16-068. Alt. Left Flap Bending Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



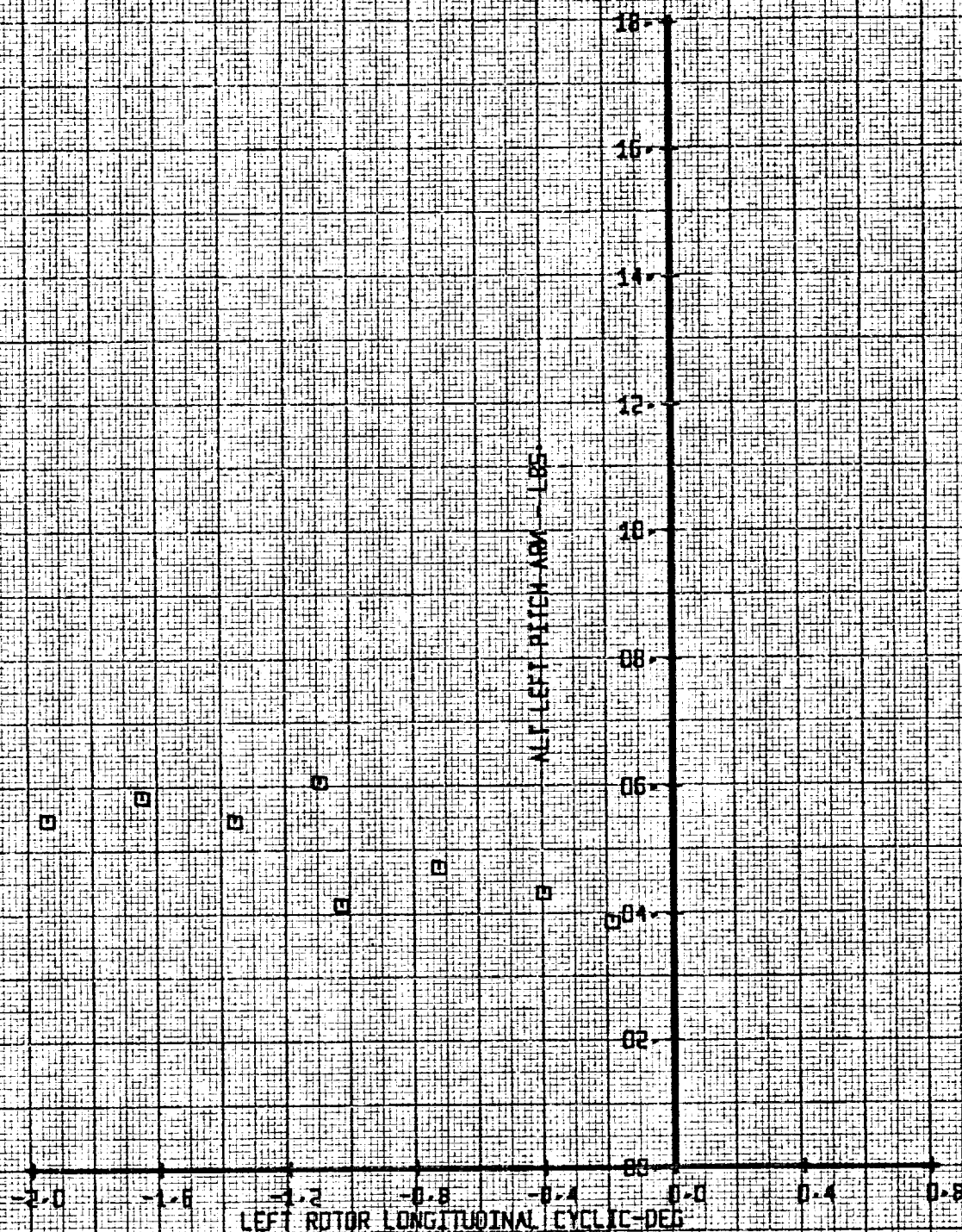
356

SET 102
BVWT 182

BVWT 182 YR0950-1
TILT ROTOR MODEL
LEFT ROTOR DATA

LEGEND
SYM RUN IN-NAO KNOTS-F.S. ALPHA-FUS FLAP
□ 150 -1 260 0 0

Figure 16-069. Alt. Left Pitch Link Load Versus Left Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



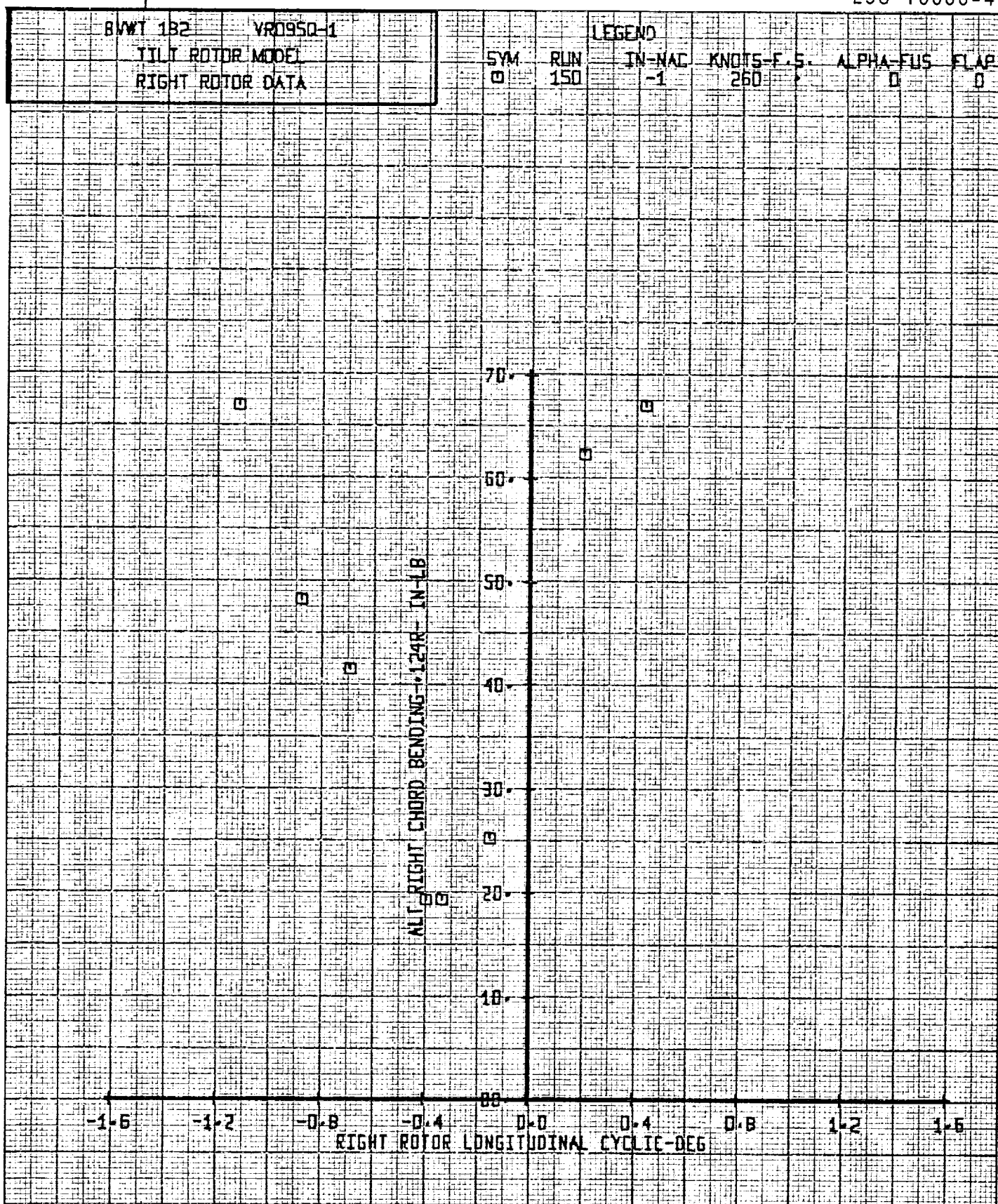


Figure 16-070. Alt. Right Chord Bending Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

BVWT 182 YR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

150

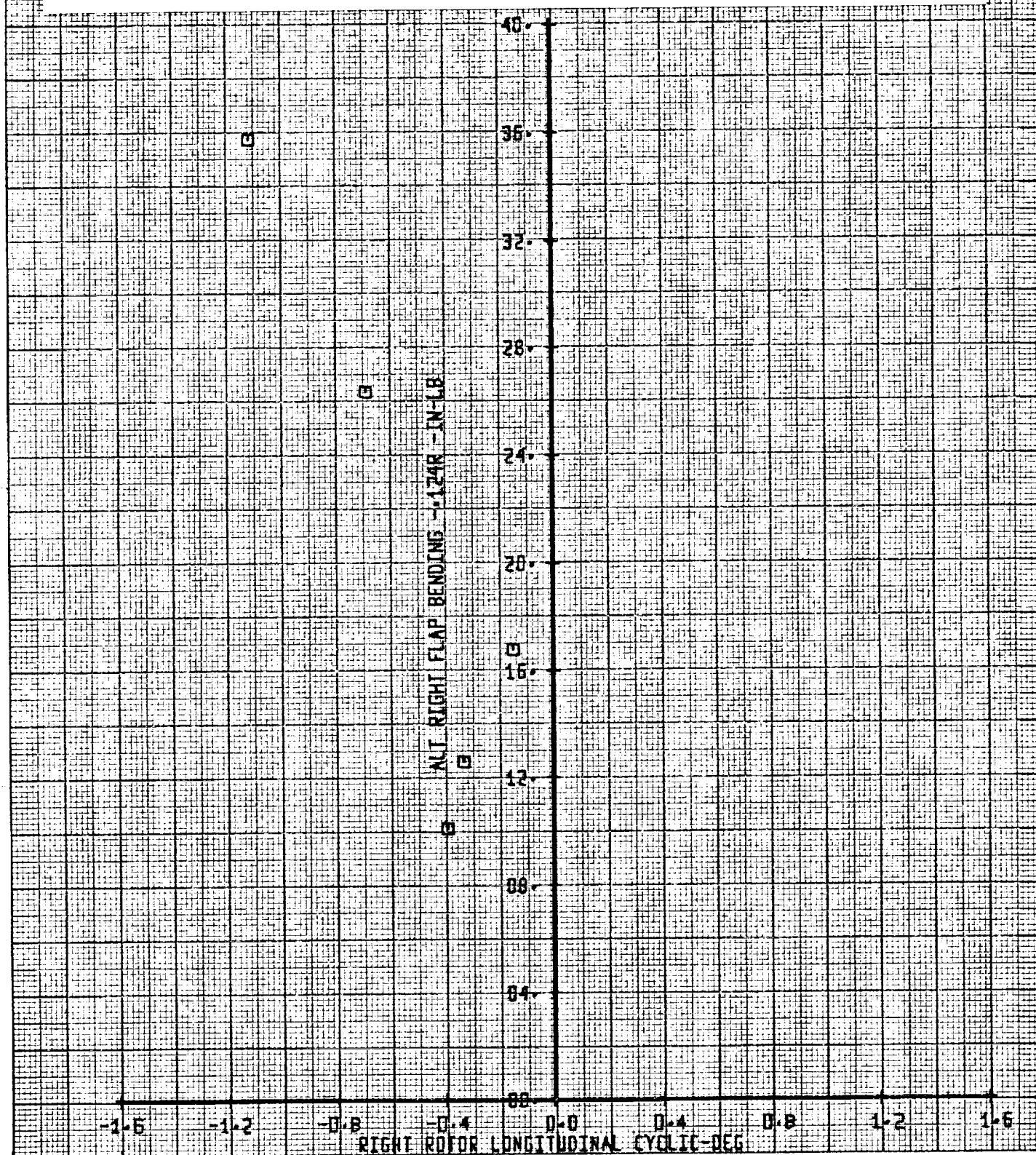
-1

260

0

0

Figure 16-071. Alt. Right Flap Bending Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



389

SET 102
BVWT 182

BWY 182 YR0950-1

TILT ROTOR MODEL

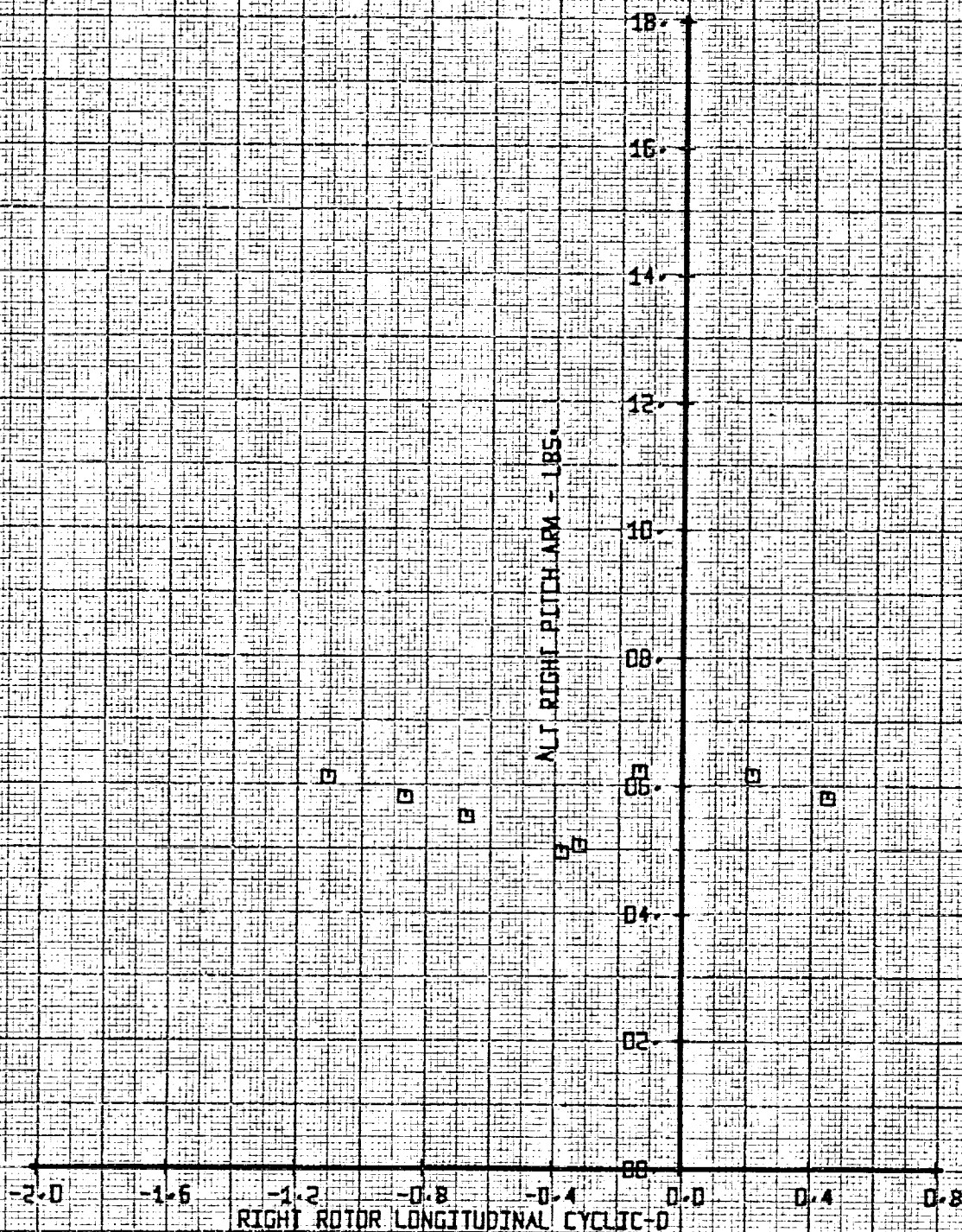
RIGHT ROTOR DATA

SYM
□RUN
150

LEGEND

IN-NAC
-1KNOTS-F-5
260ALPHA-FUS
0FLAP
0

Figure 16-072. Alt. Right Pitch Link Load Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



BVWT 182 VR0950-1

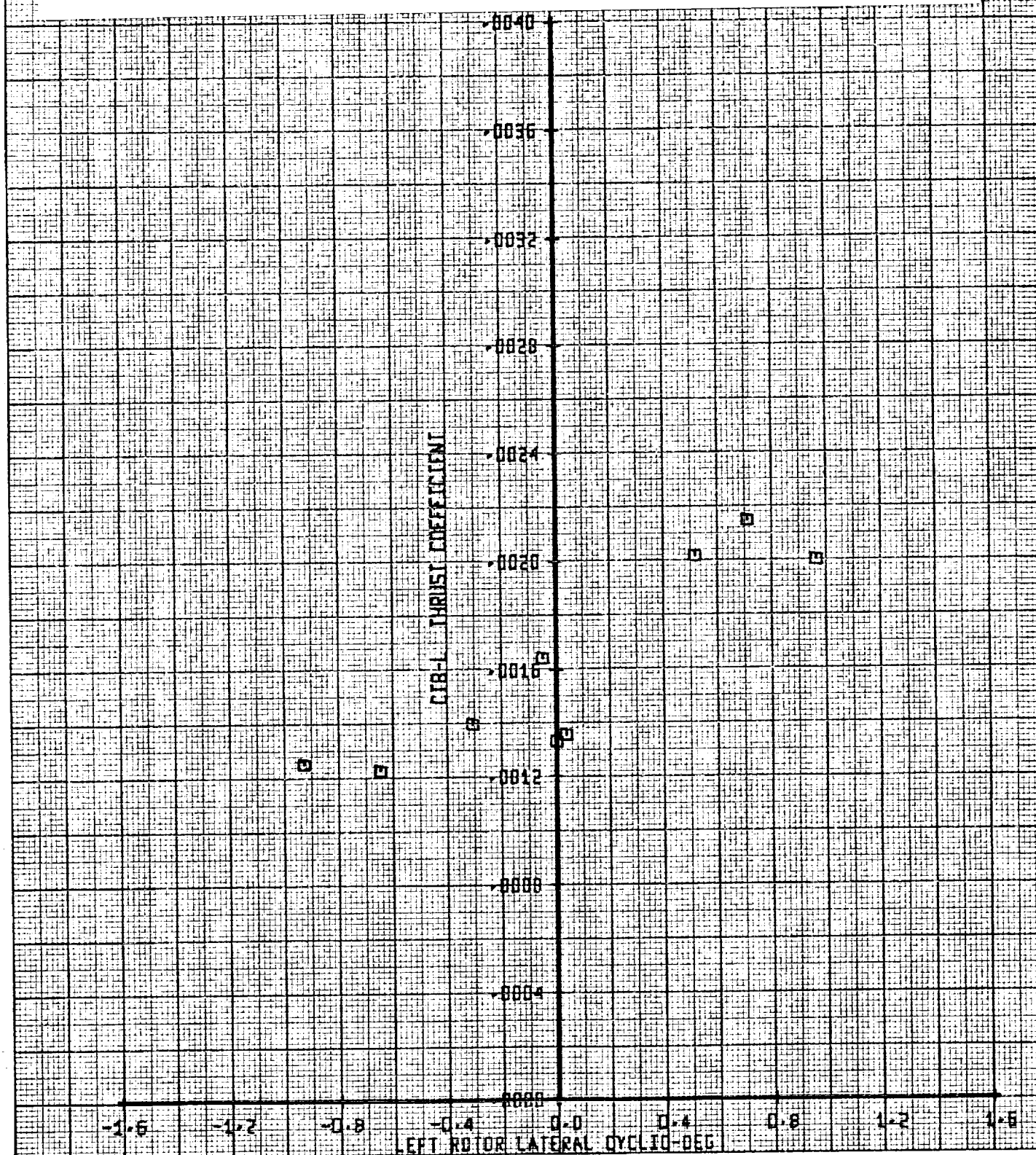
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM
□RUN
149IN-NAC
-1KNOTS-F.S.
260ALPHA-FUS
0FLAP
0

Figure 16-073. Left Rotor Thrust Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 260 Knots.



BVWT 182 VR0950-1

TILT ROTOR MODE

LEFT ROTOR DATA

LEGEND

SYM
□RUN
149IN-NAC
-1KNOTS-F.S.
260ALPHA-FUS
0FLAP
0

Figure 16-074. Left Rotor Power Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 260 Knots.

CPB-L POWER COEFFICIENT

LEFT ROTOR LATERAL CYCLIC-DEG

0.040
0.036
0.032
0.028
0.024
0.020
0.016
0.012
0.008
0.004
0.000

-1.6 -1.2 -0.8 -0.4 0.0 0.4 0.8 1.2 1.6

392

SET 101
BVWT 182

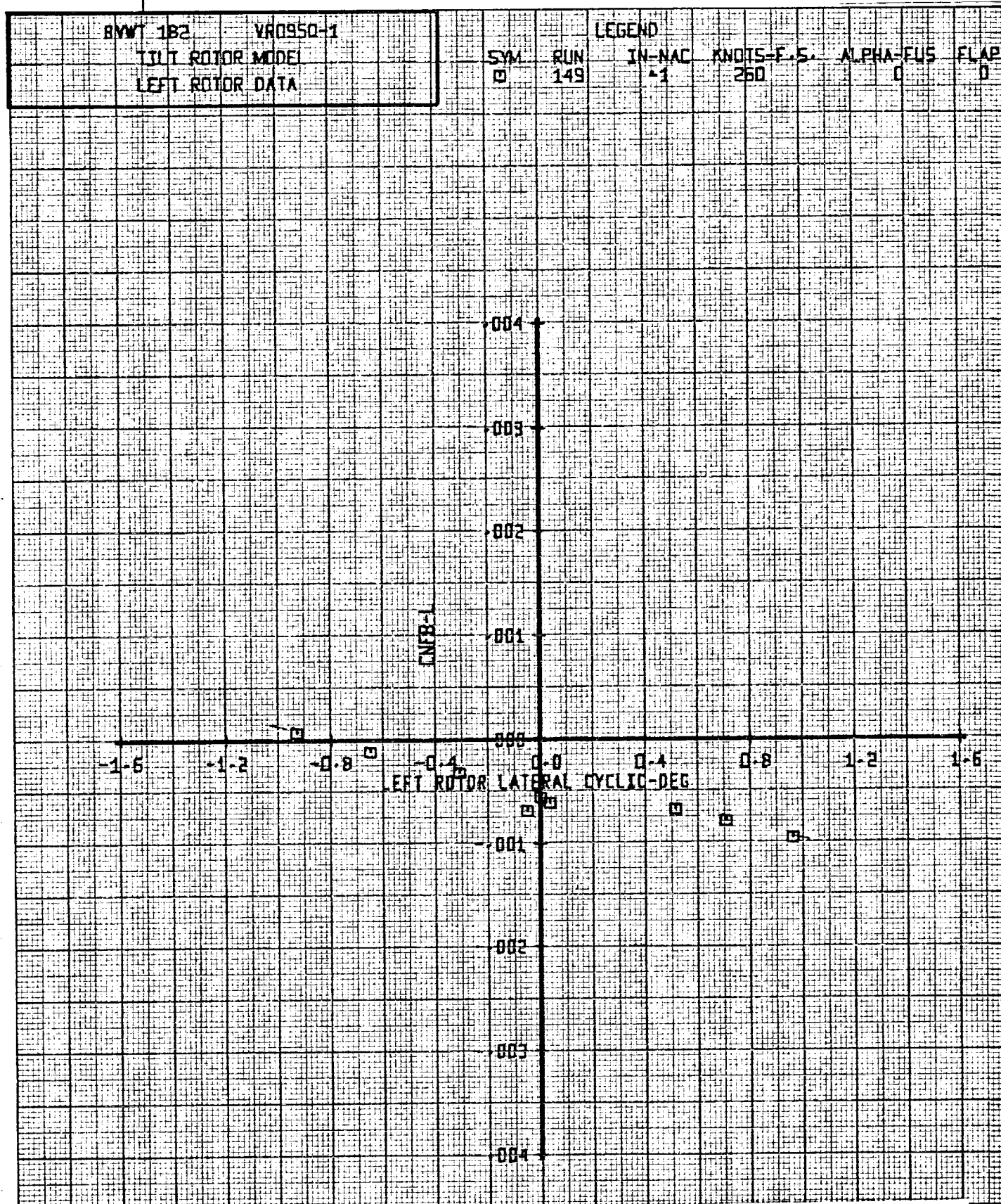


Figure 16-075. Left Rotor Normal Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

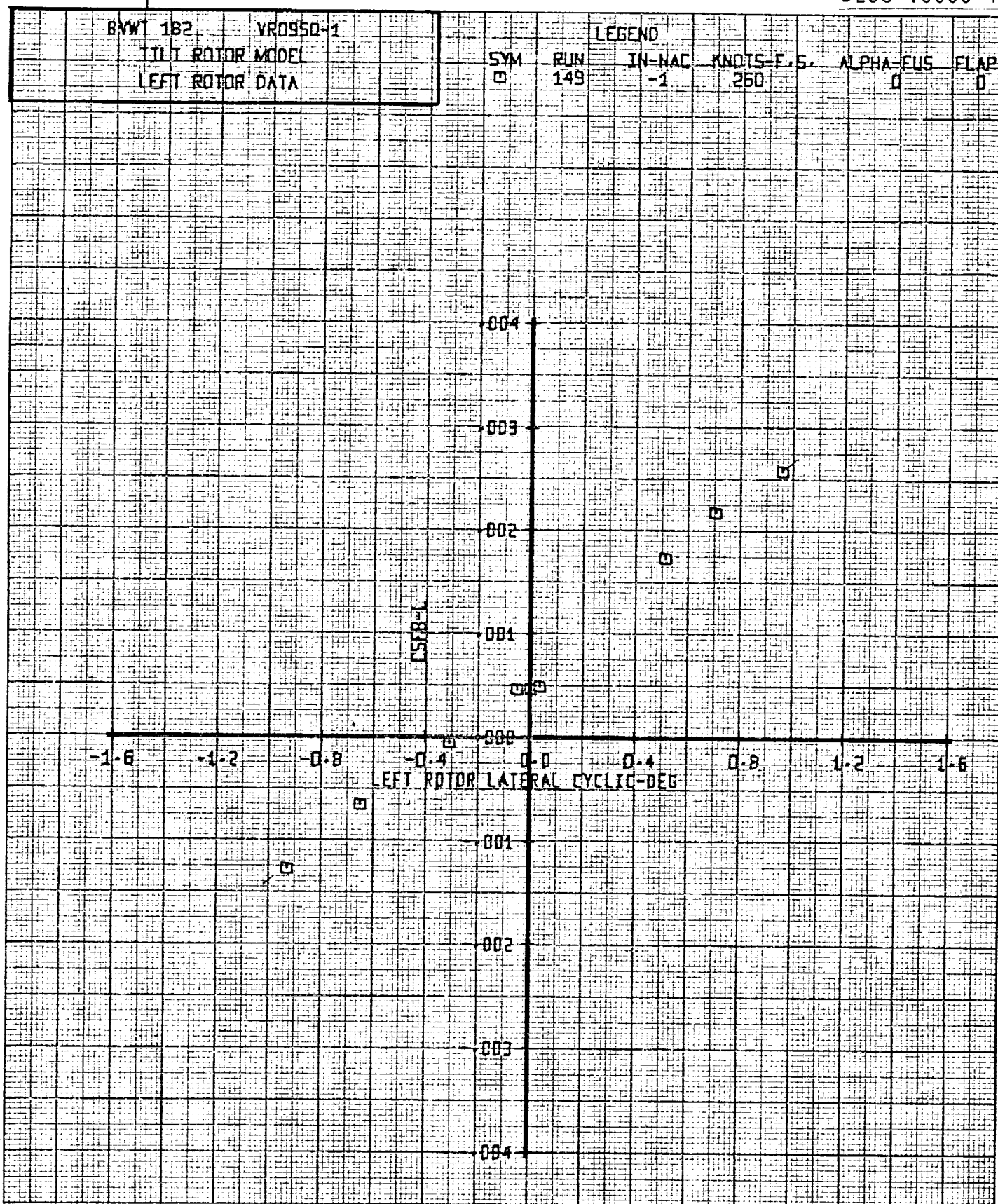


Figure 16-076. Left Rotor Side Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

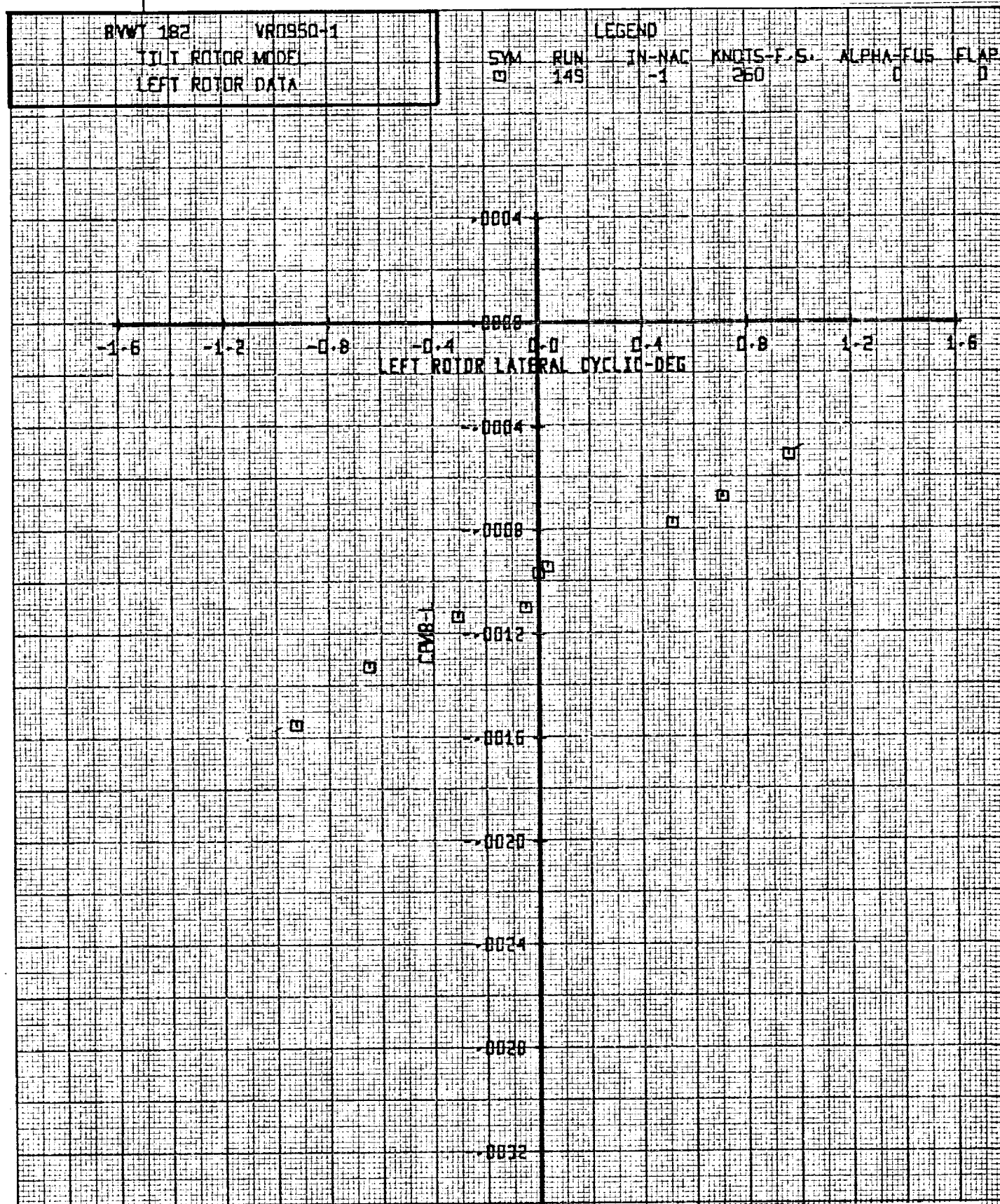


Figure 16-077. Left Rotor Pitching Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

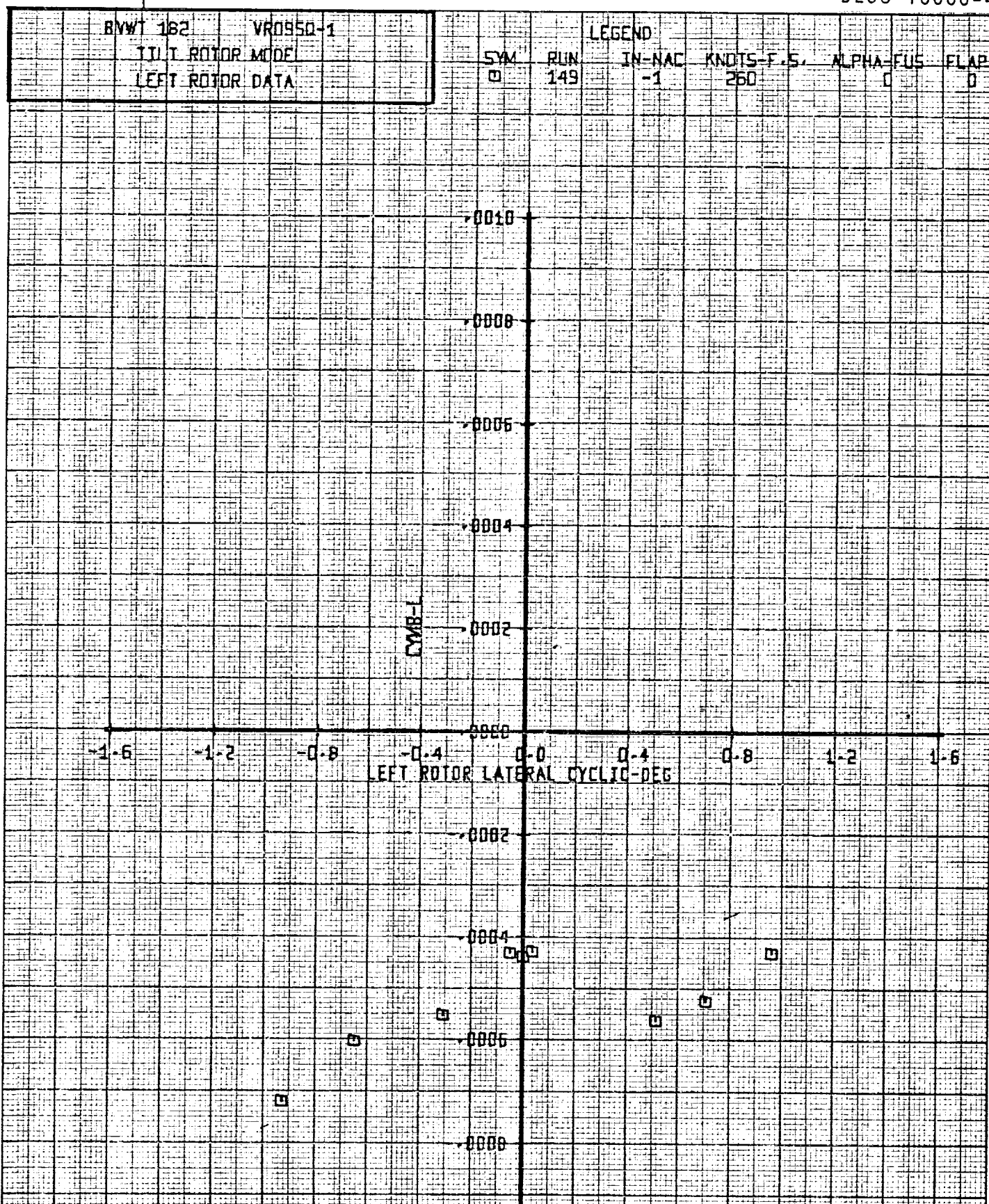


Figure 16-078. Left Rotor Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

BVWT 182 VR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

149

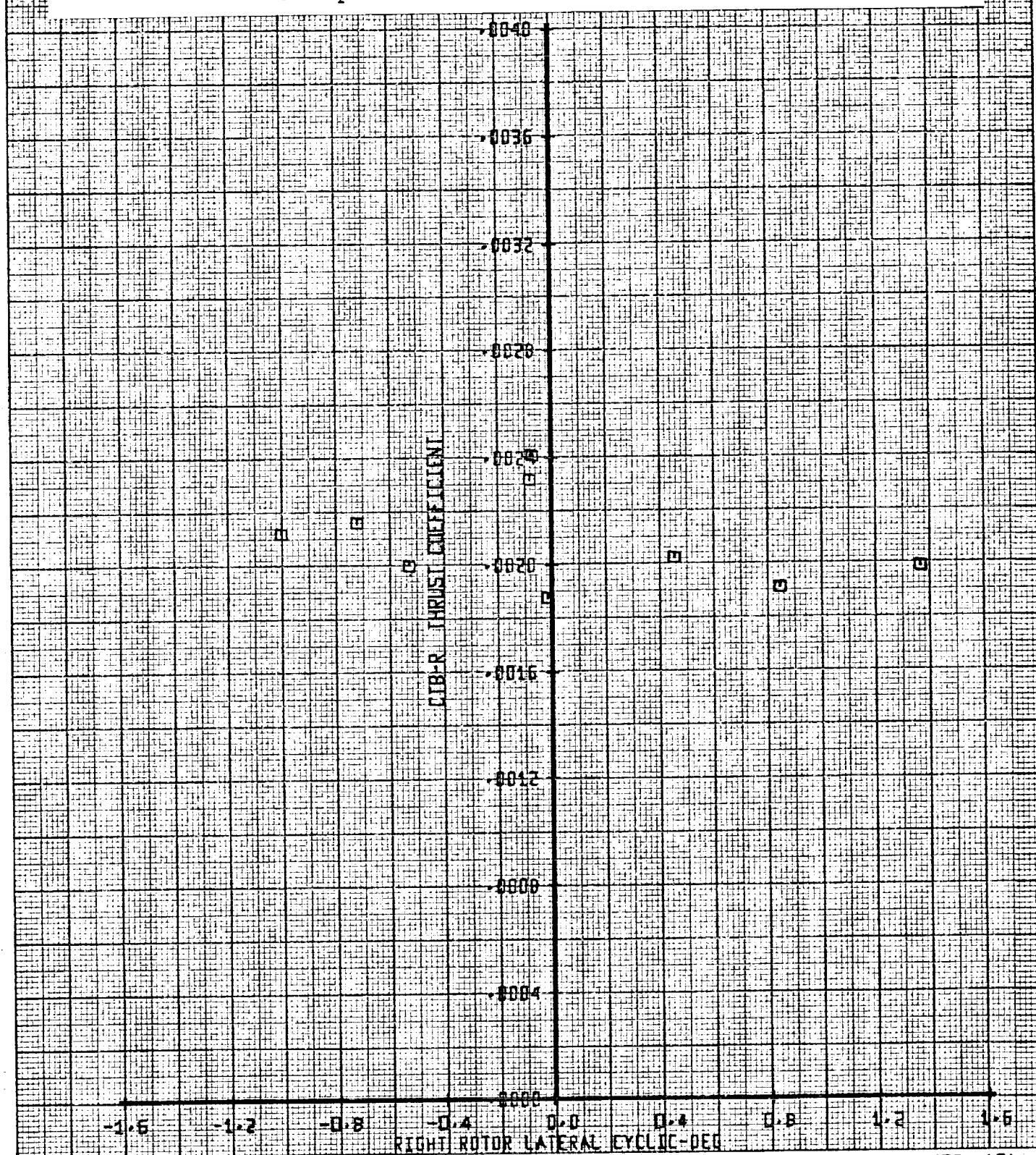
-1

260

0

0

Figure 16-079. Right Rotor Thrust Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale. Airspeed 260 Knots.



BVWT 182 VR0950-1

TJLI ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

149

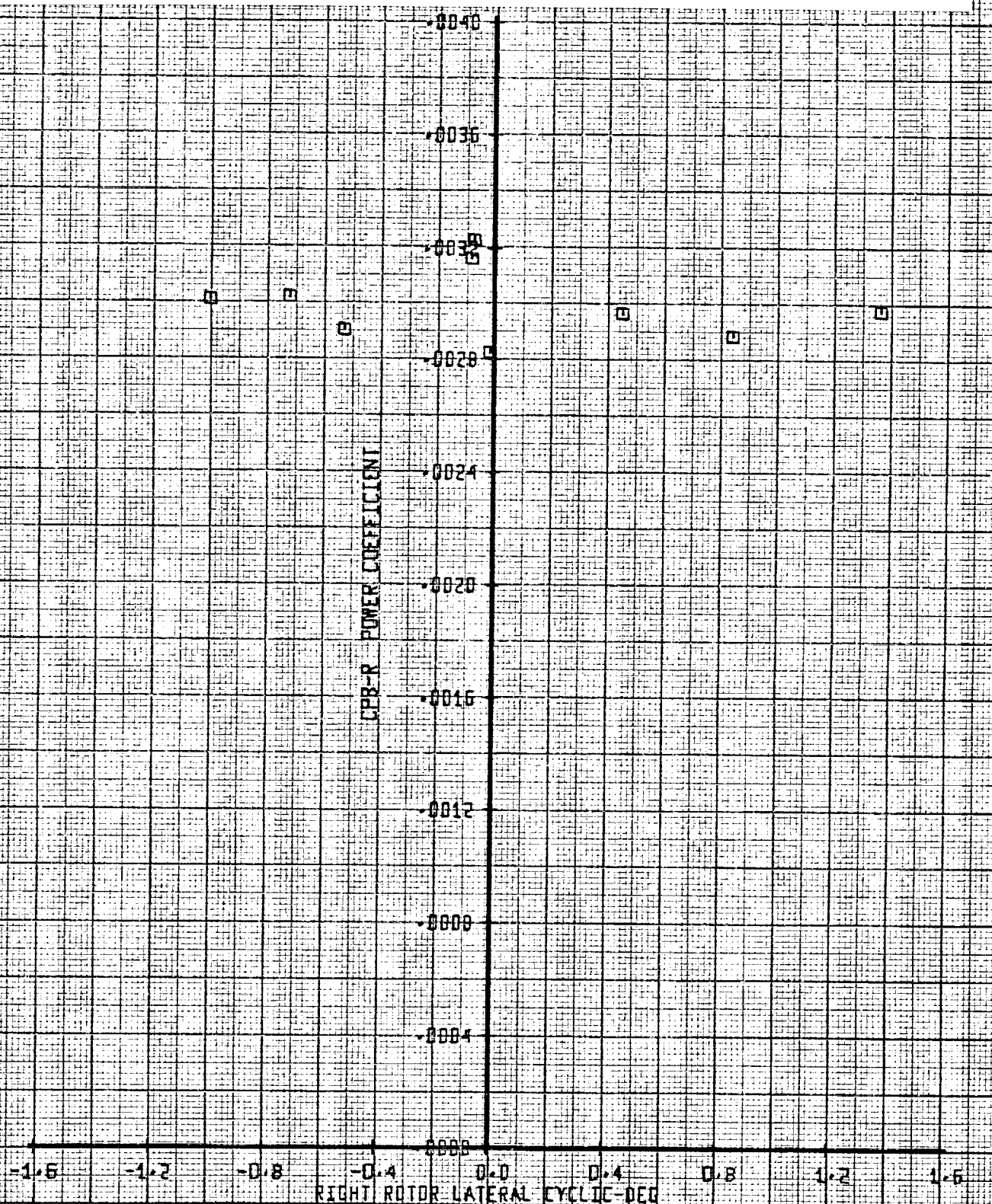
-1

260

0

0

Figure 16-080. Right Rotor Power Coefficient Versus Right Rotor Lat. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 260 Knots.



395

SET 101
BVWT 182

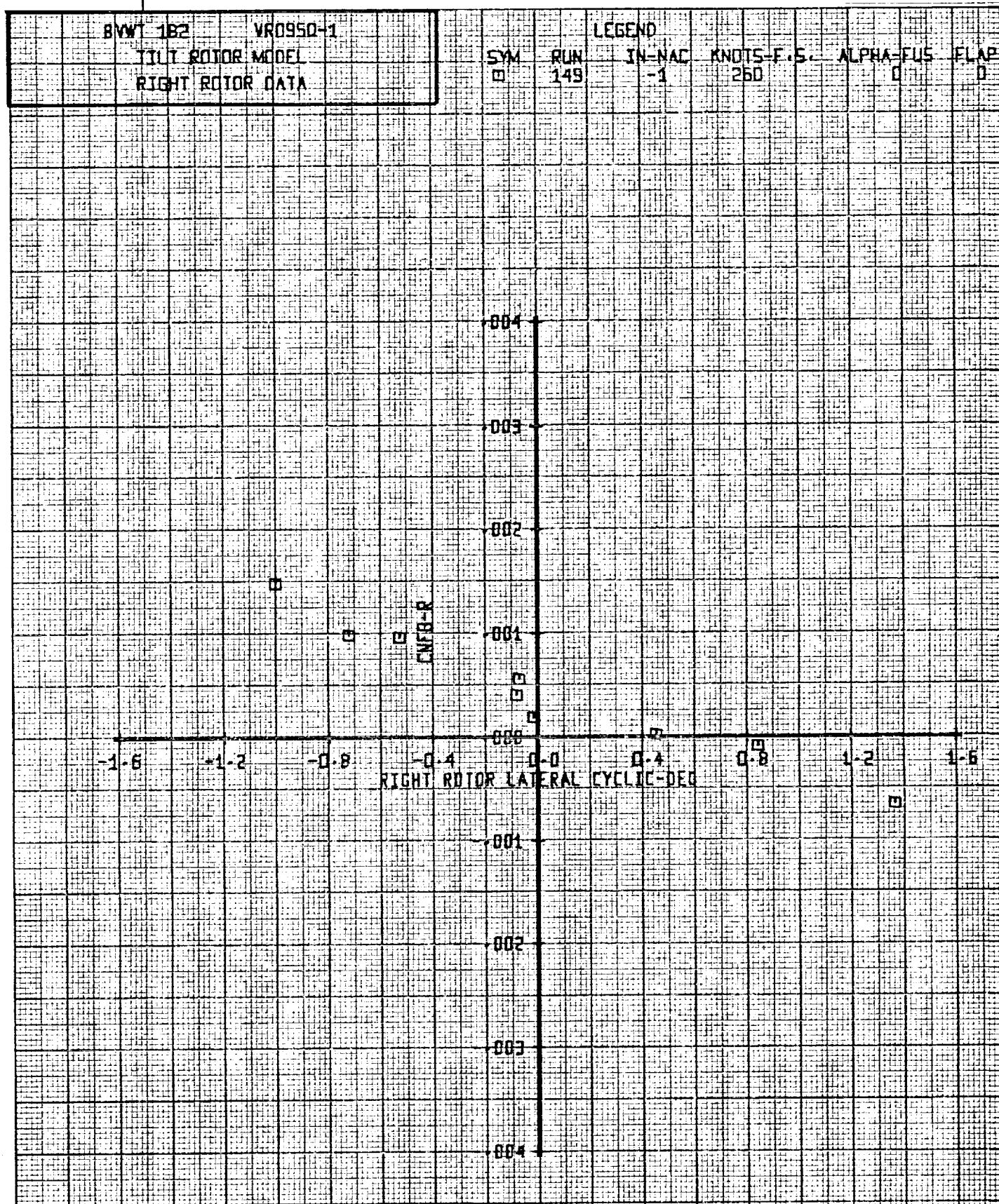


Figure 16-081. Right Rotor Normal Force Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

BNWT 182 VR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND

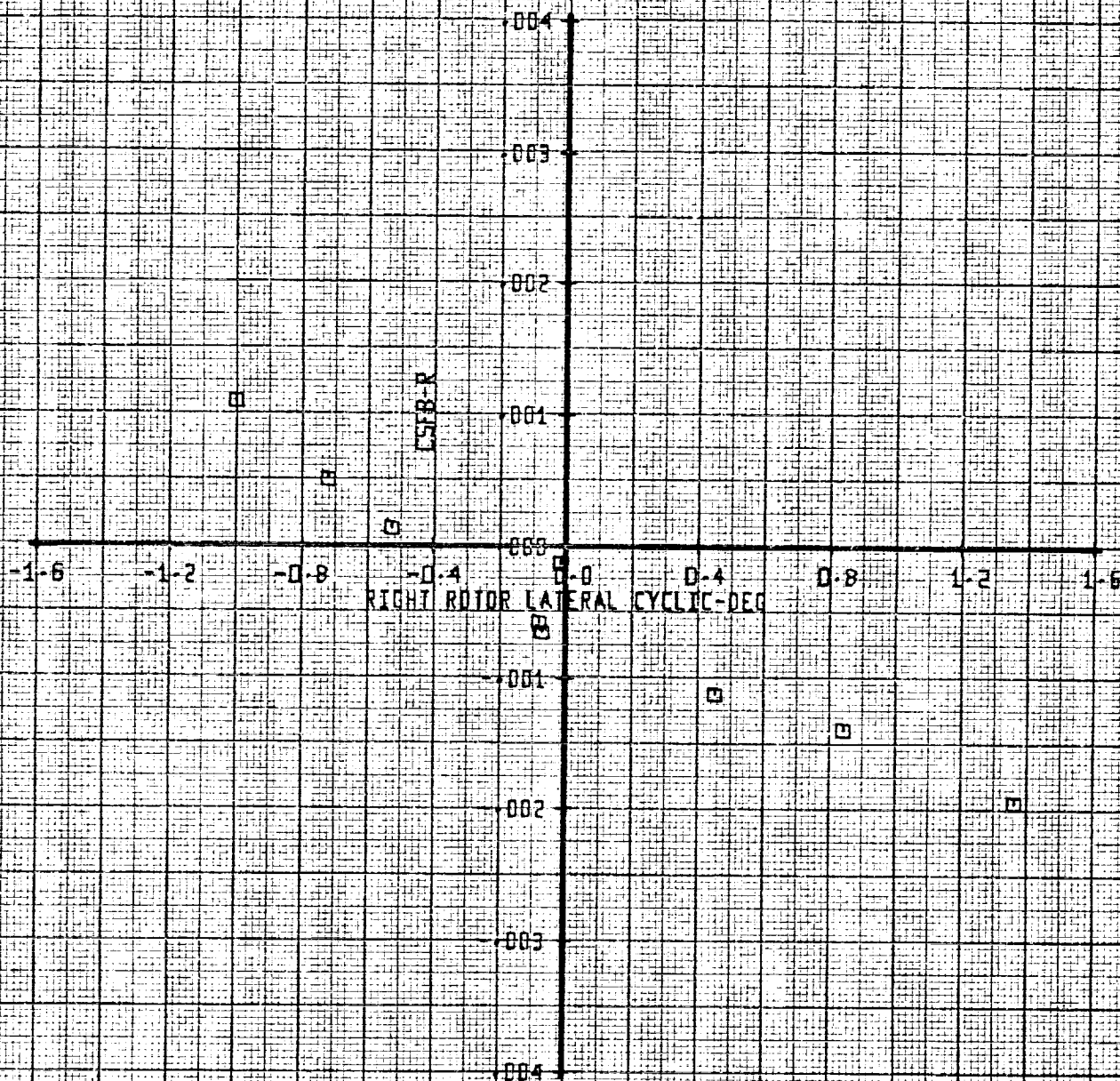
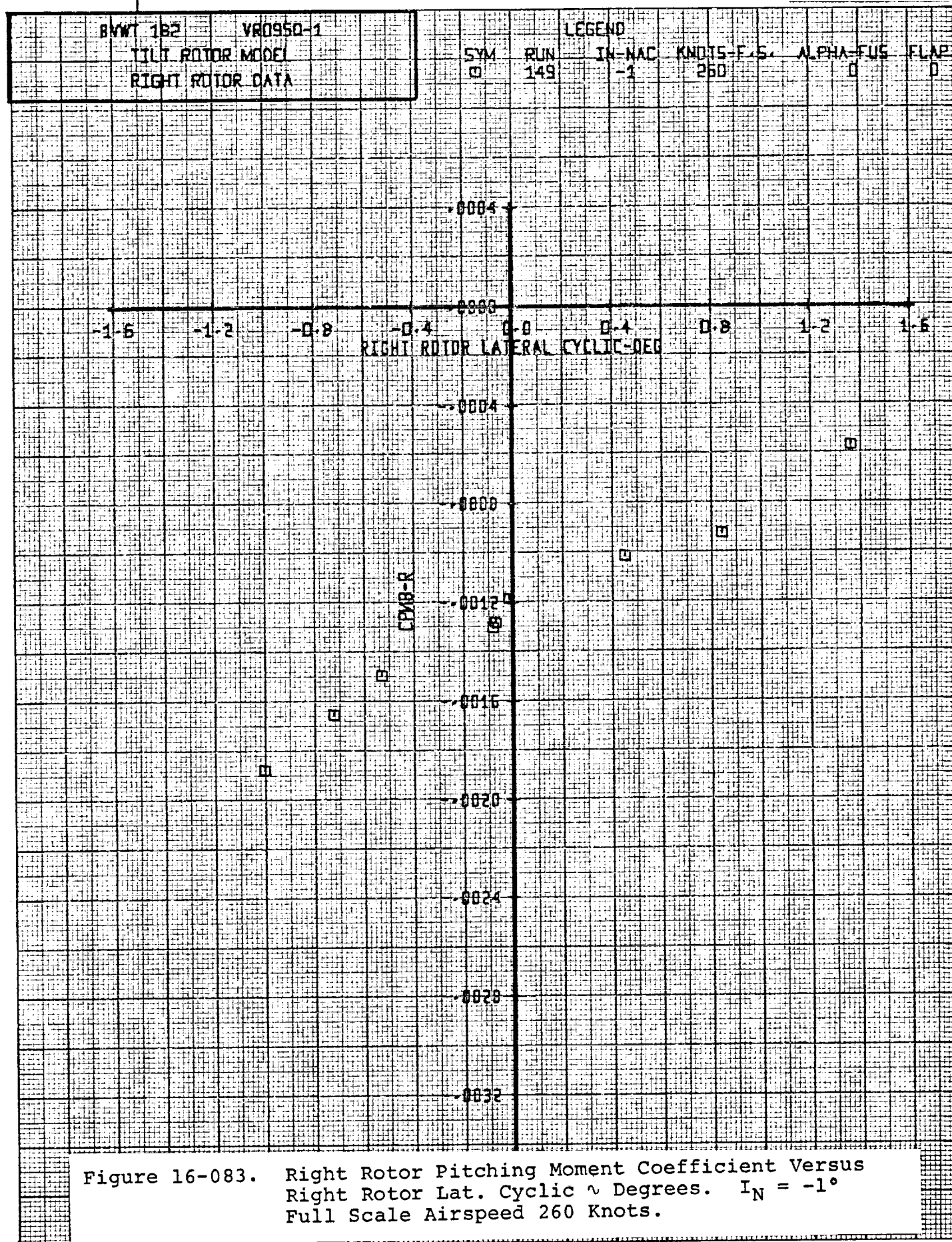
SYM
□RUN
149IN-NAC
-1KNOTS-F.S.
260ALPHA-FUS
0FLAP
0

Figure 16-082. Right Rotor Side Force Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



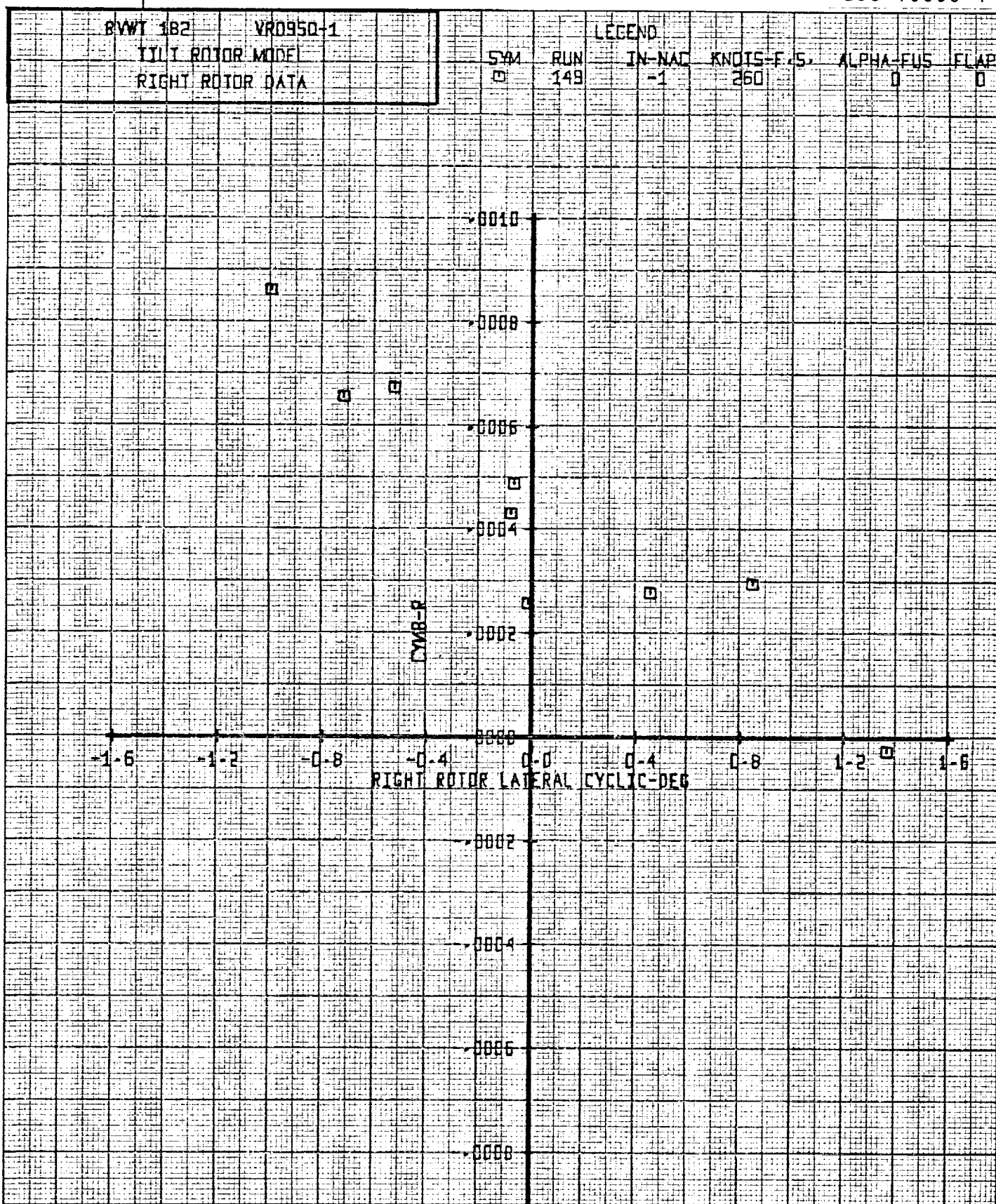
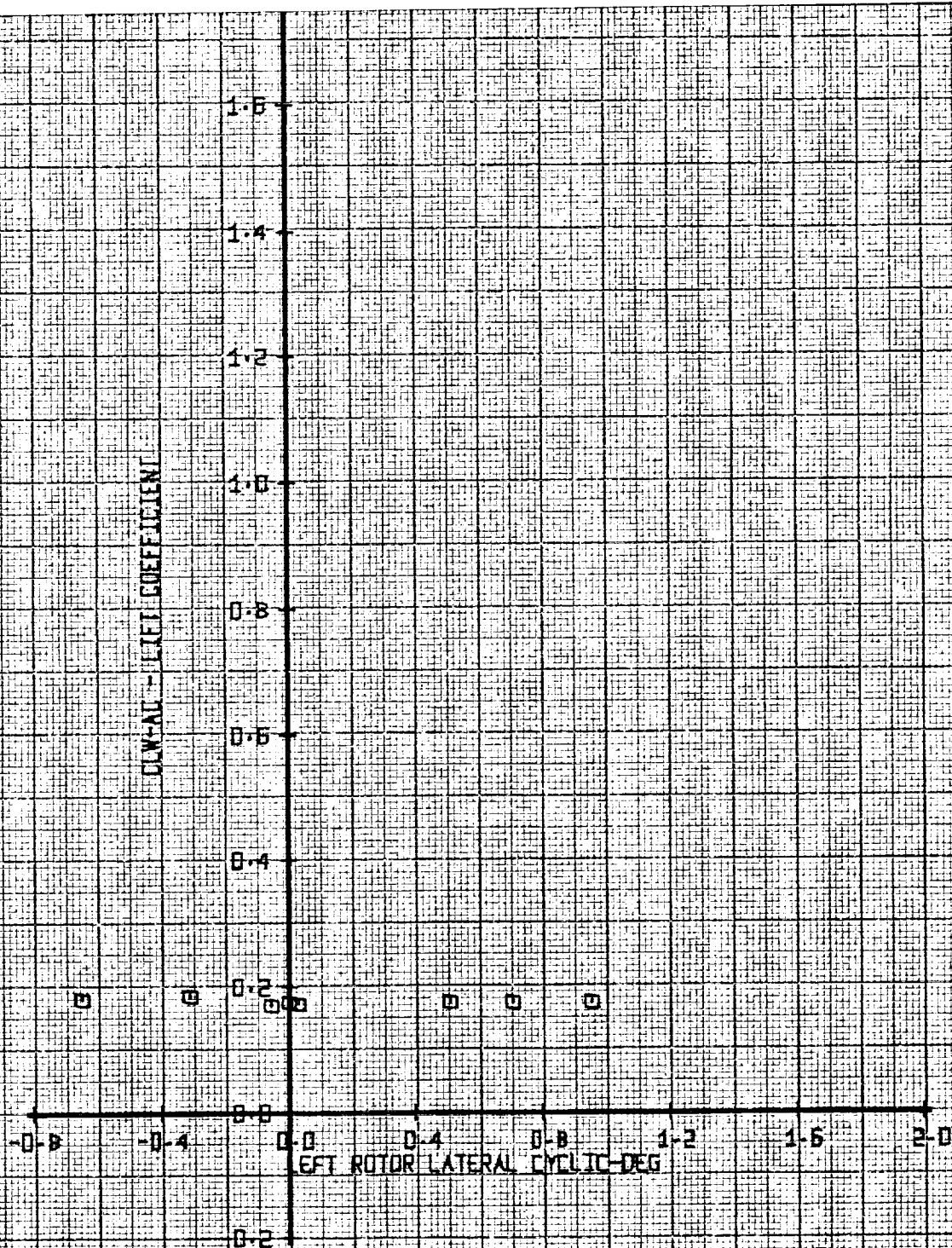


Figure 16-084. Right Rotor Yawing Moment Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

BVWT 182 VR0950-1
 TILT ROTOR MODEL

 LEGEND
 SYM RUN IN-NAC KNOTS-F-5 ALPHA-FUS FLAP
 □ 149 -1 260 0 0

Figure 16-085. Aircraft Lift Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



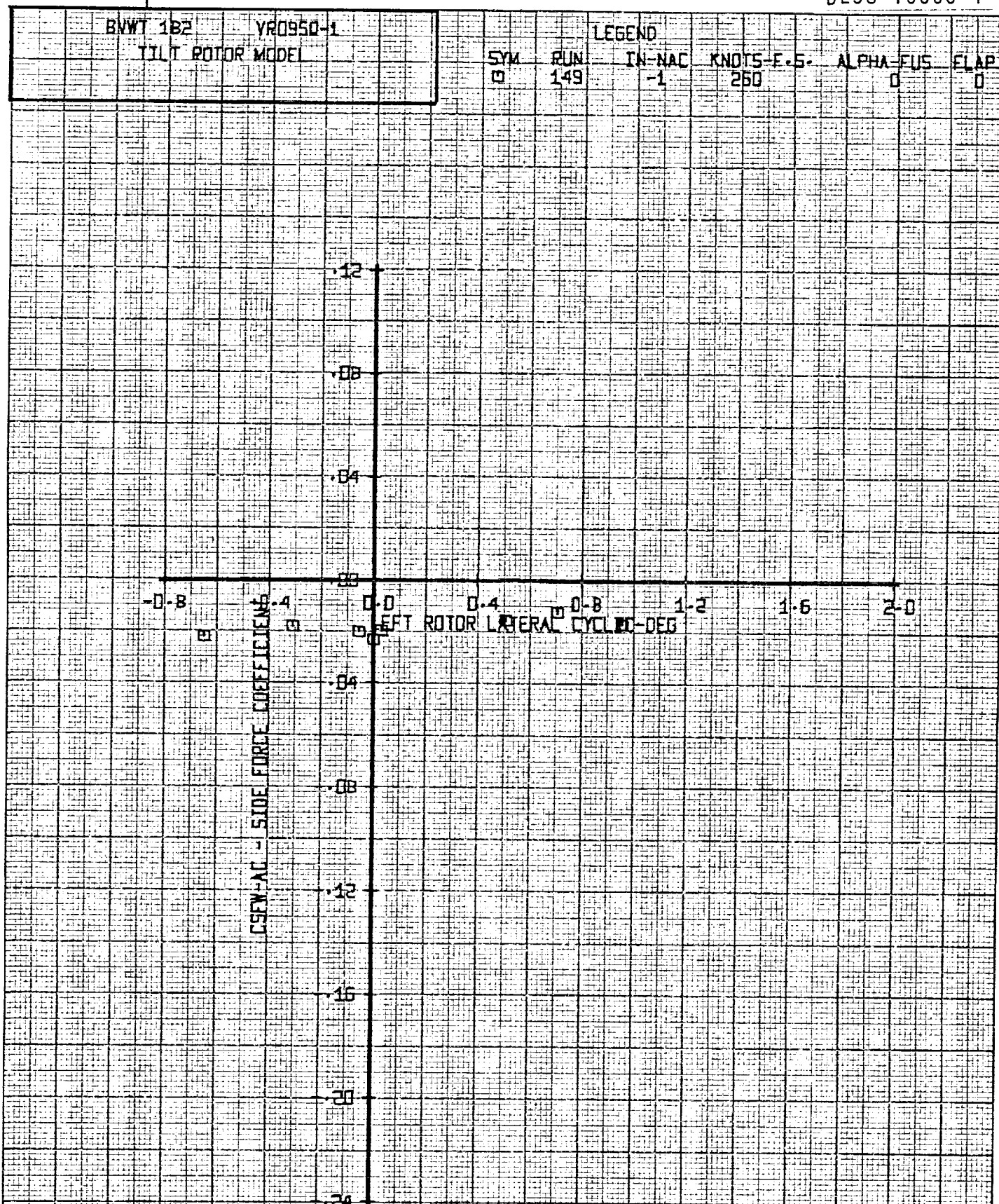


Figure 16-086. Aircraft Side Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

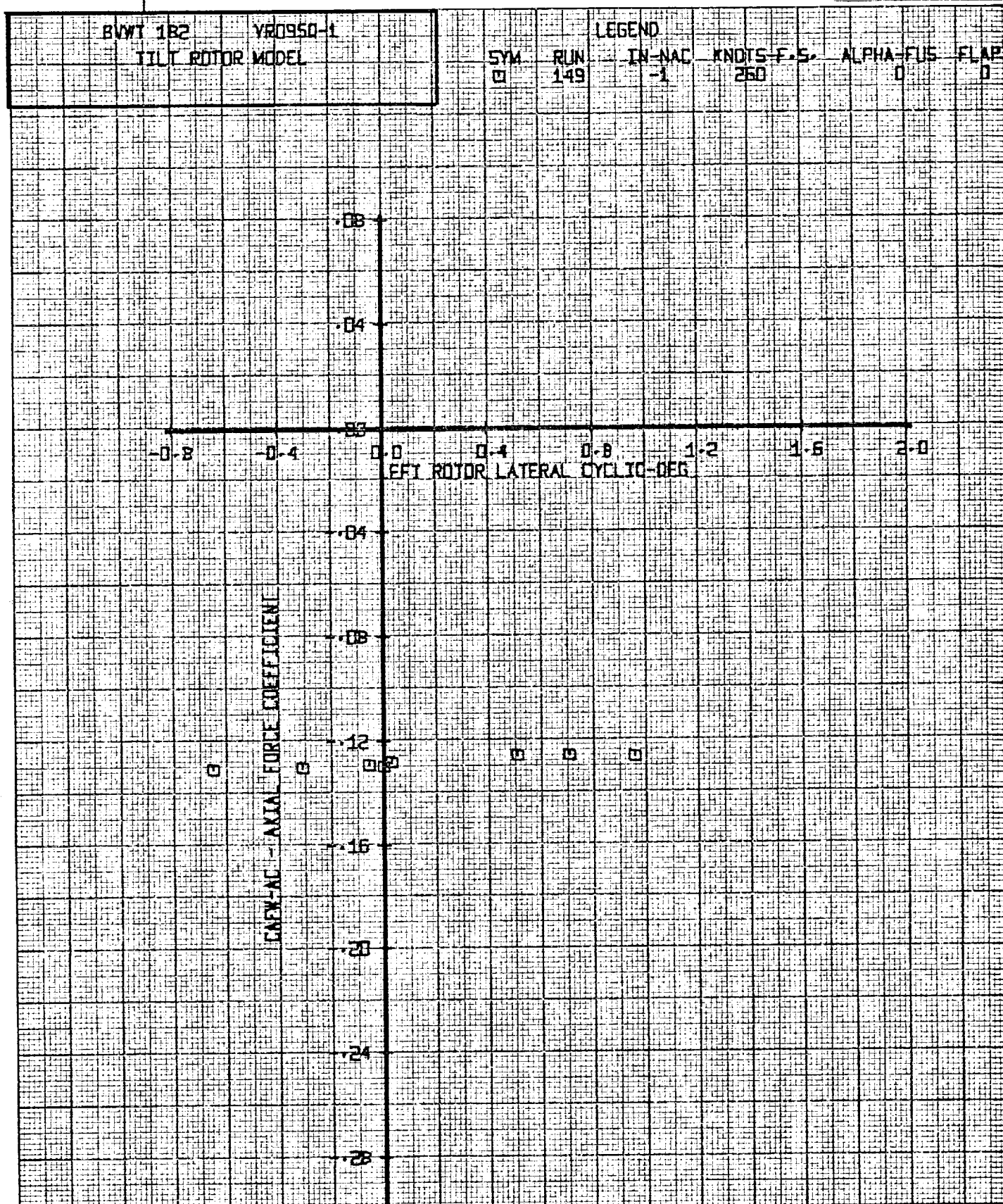


Figure 16-087. Aircraft Axial Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

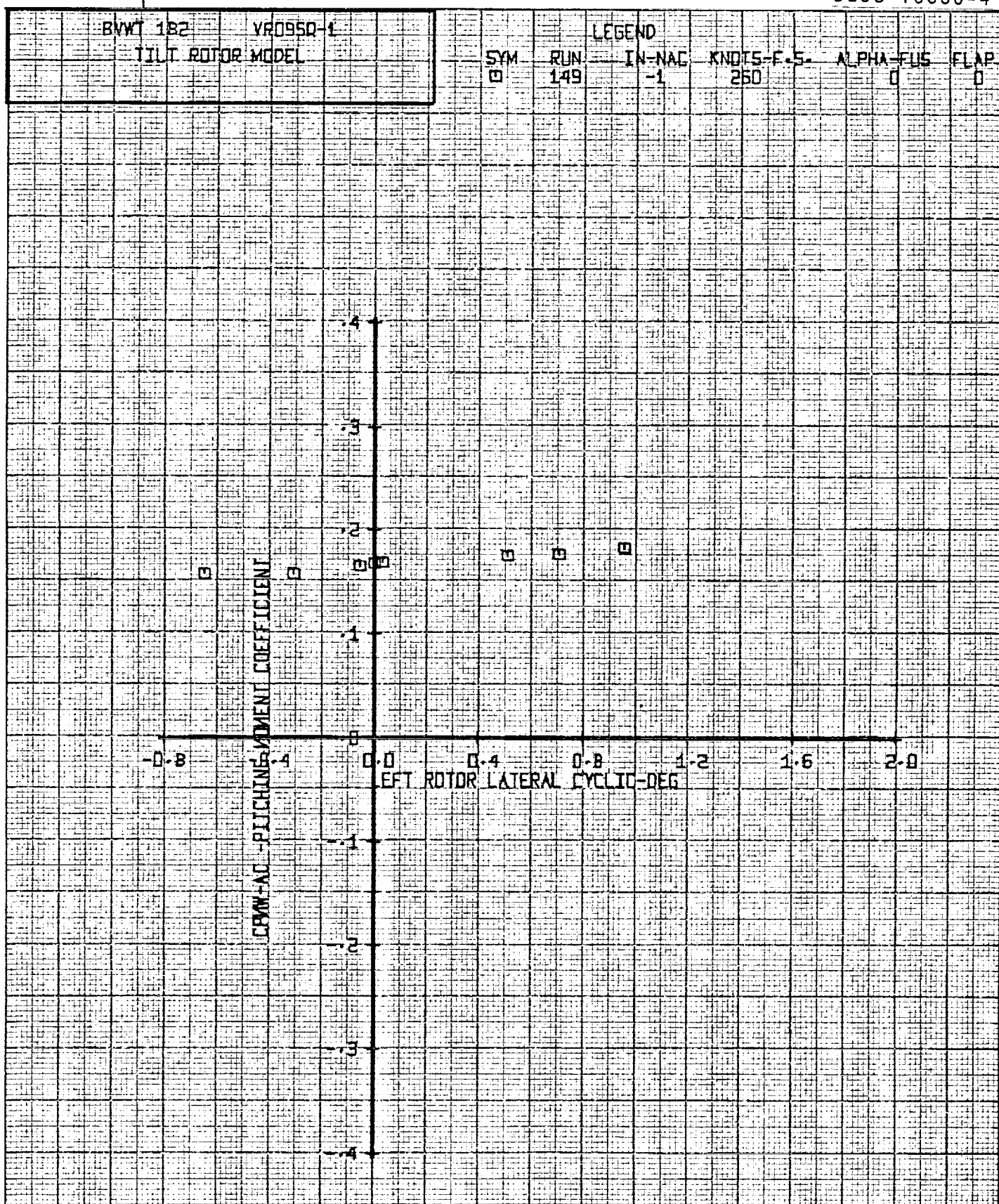


Figure 16-088. Aircraft Pitching Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

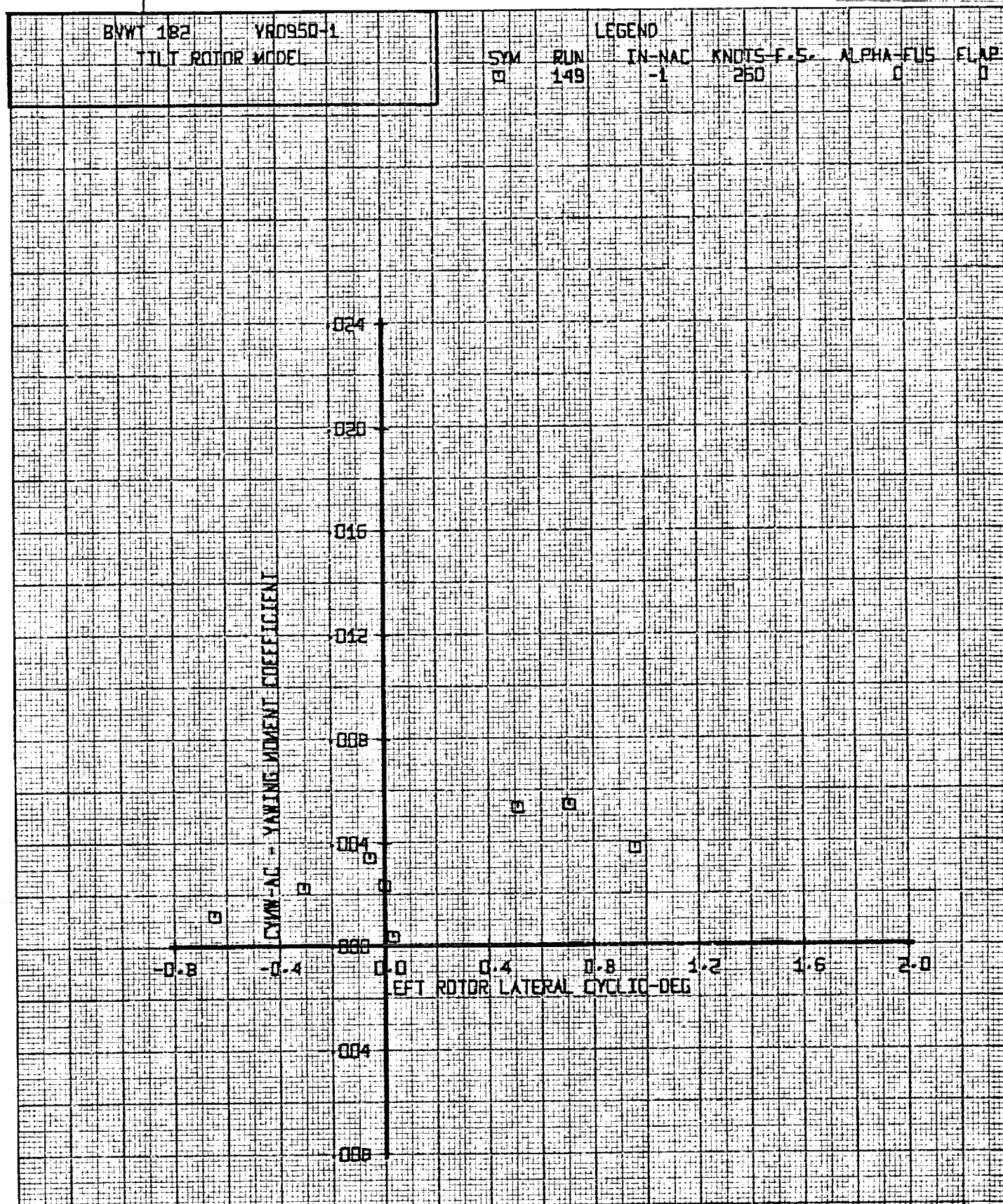


Figure 16-089. Aircraft Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

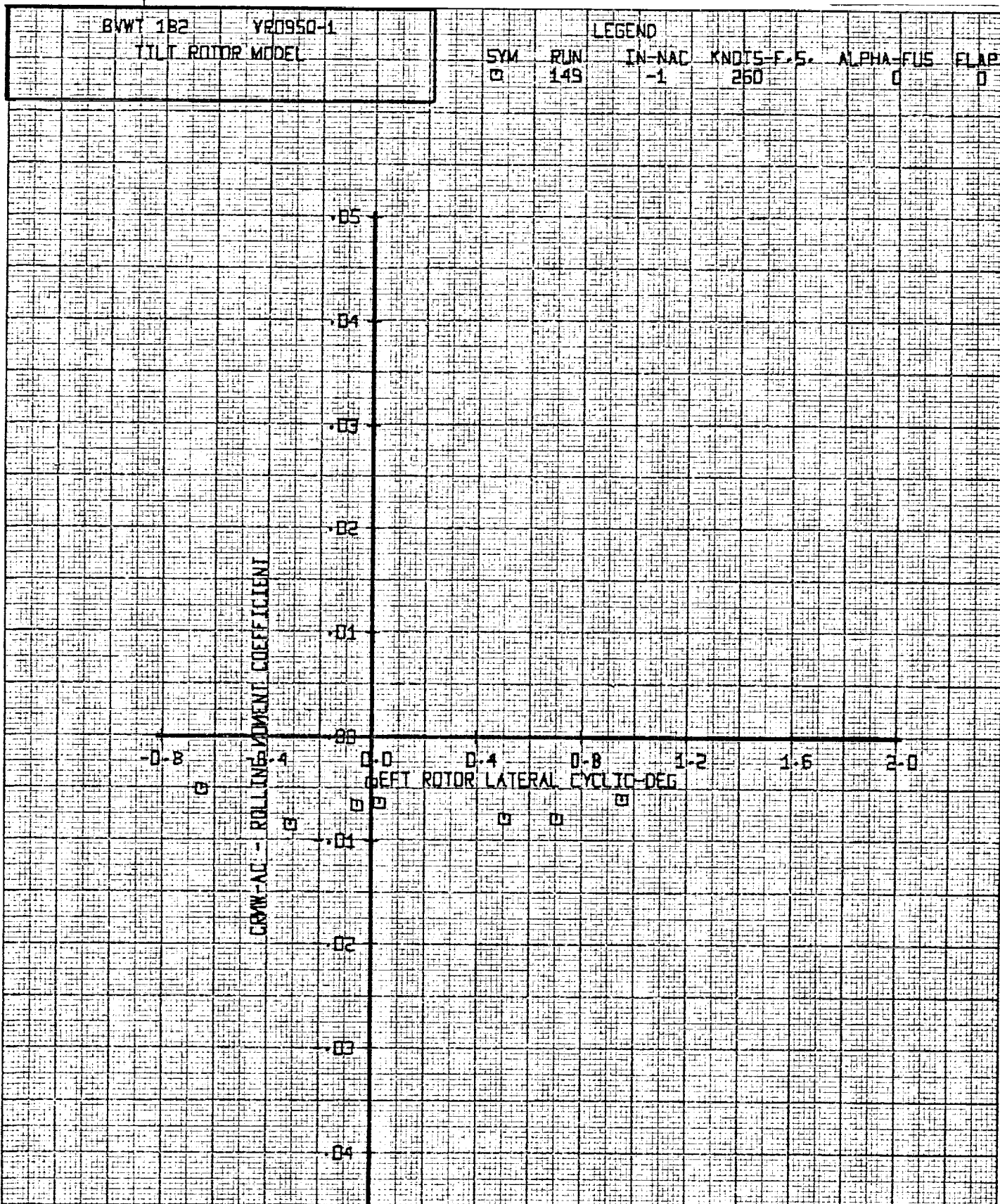


Figure 16-090. Aircraft Rolling Moment Coefficient Versus Left Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

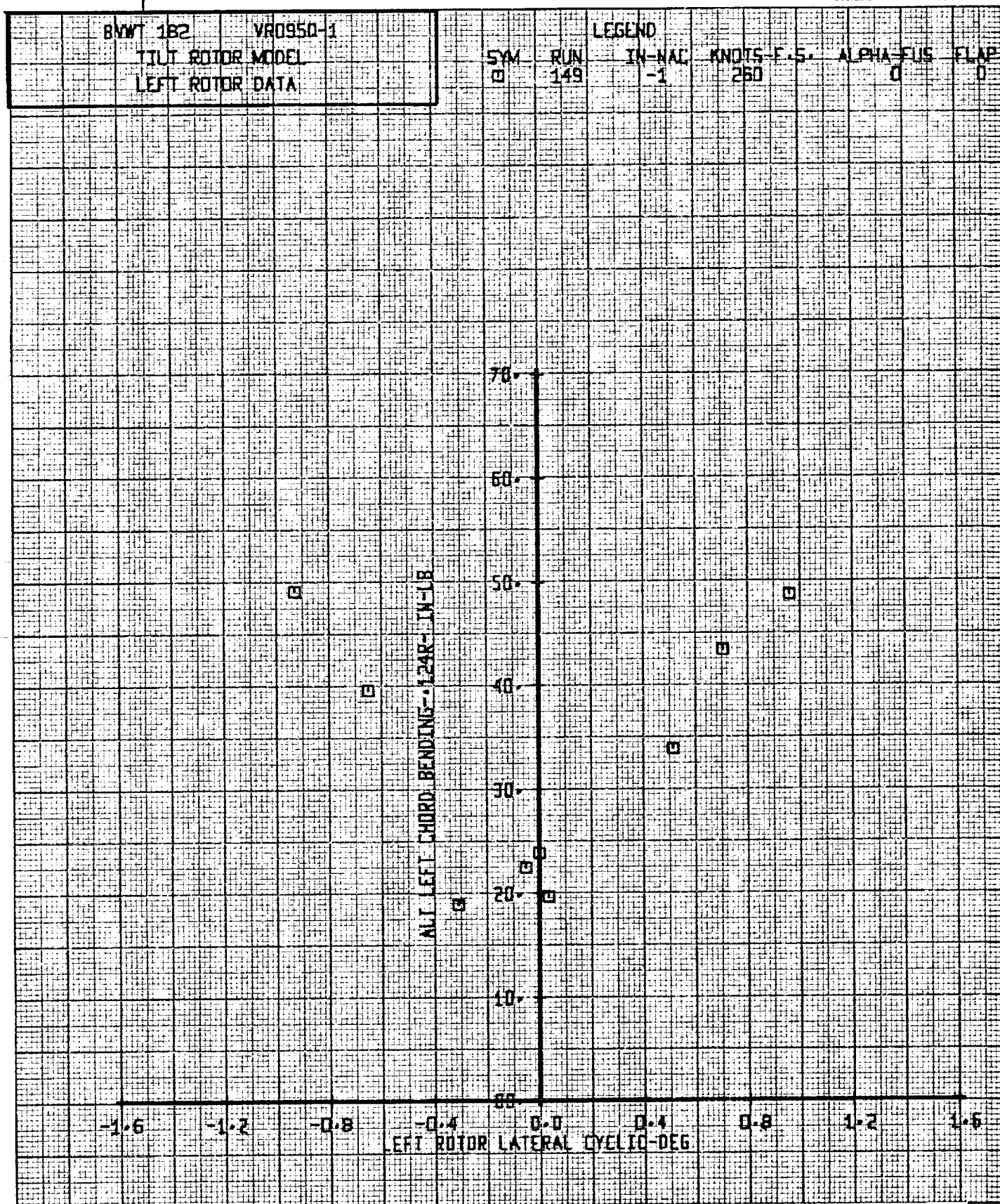


Figure 16-091. Alt. Left Chord Bending Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

BMW 182 VR0950-1

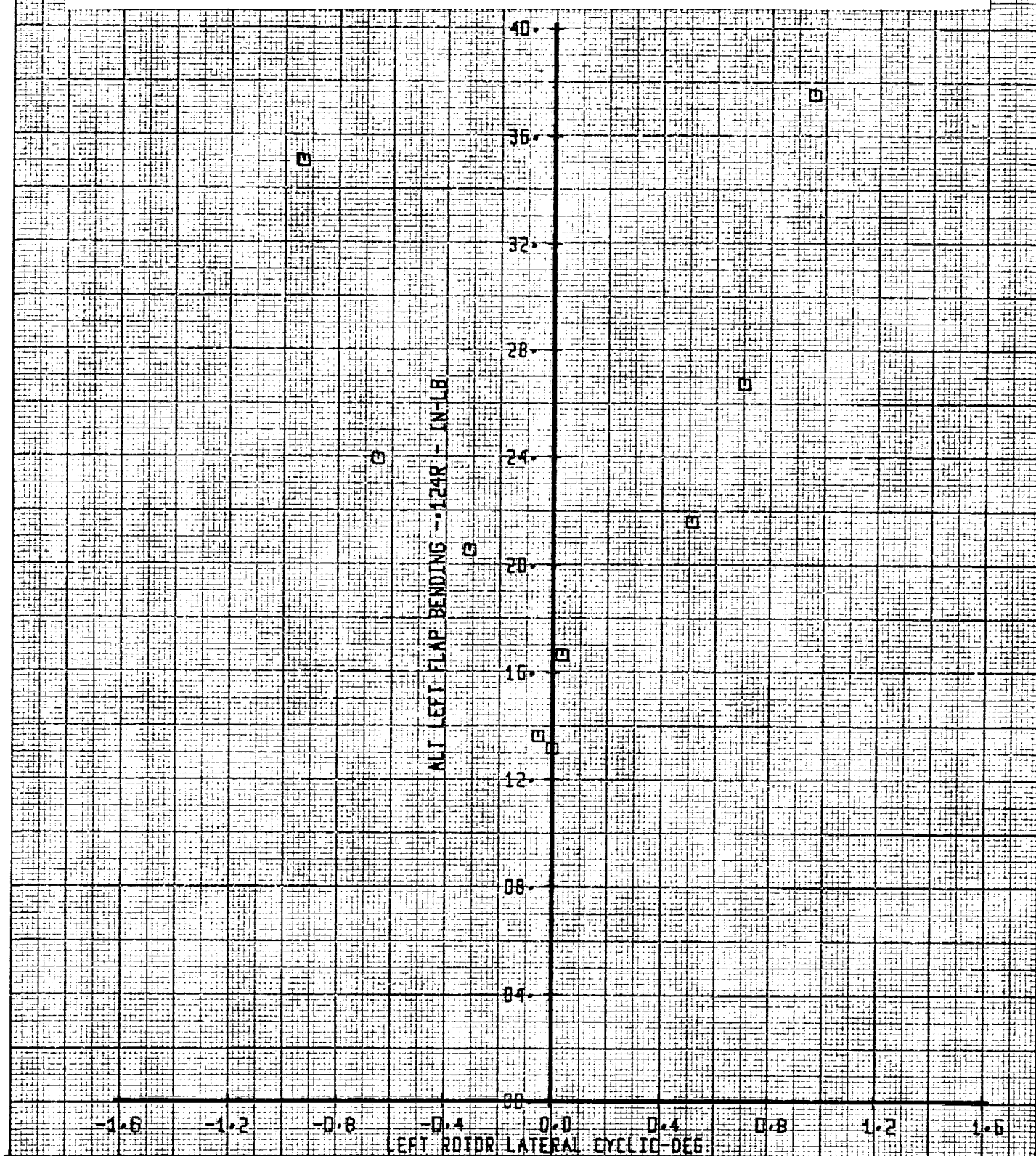
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	149	-1	260	0	0

Figure 16-092. Alt. Left Flap Bending Versus Left Rotor Lat.
Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed
260 Knots.



410

 SET 101
 BYWT 182

BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

0

149

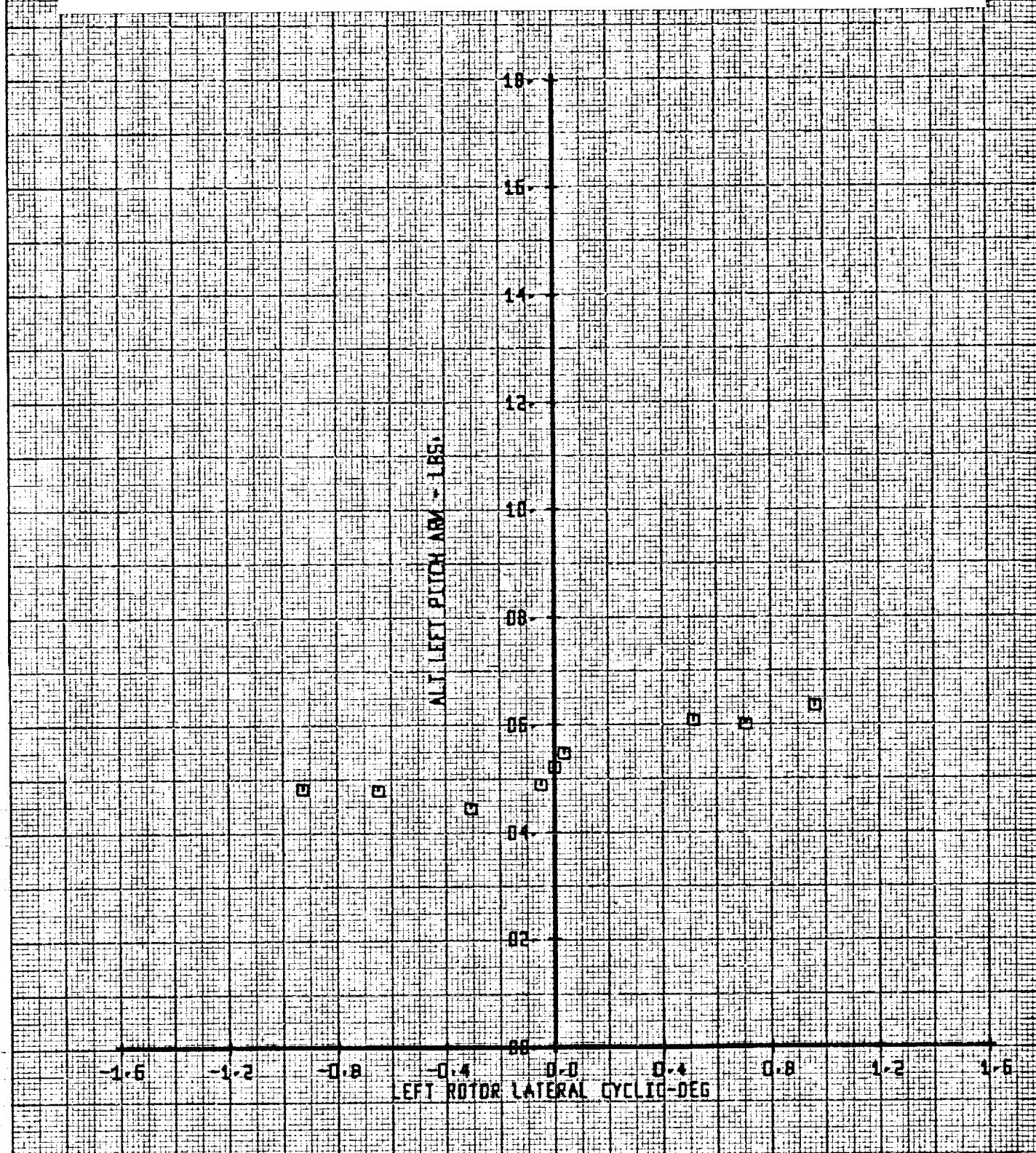
-1

260

0

0

Figure 16-093. Alt. Left Pitch Link Load Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



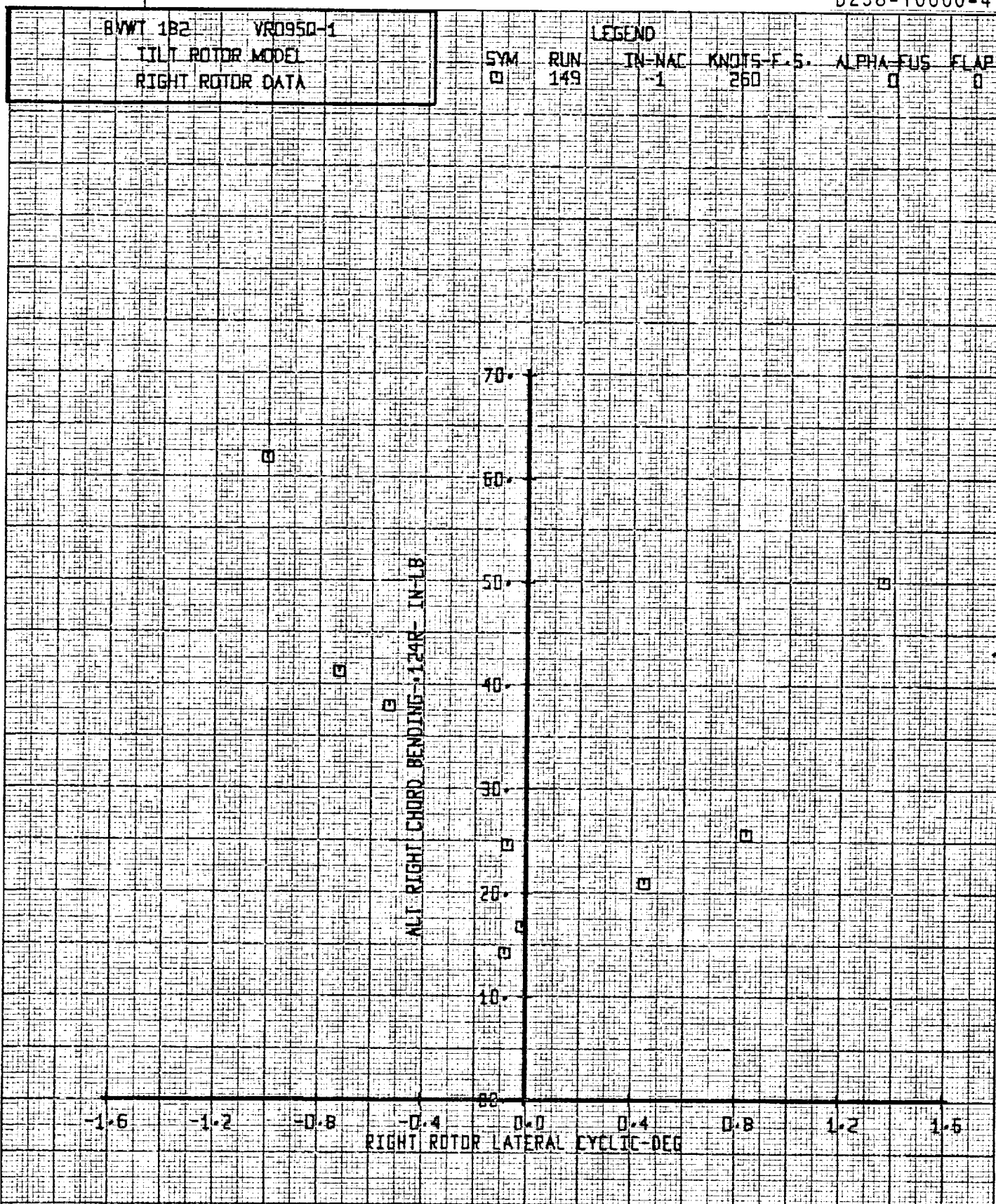
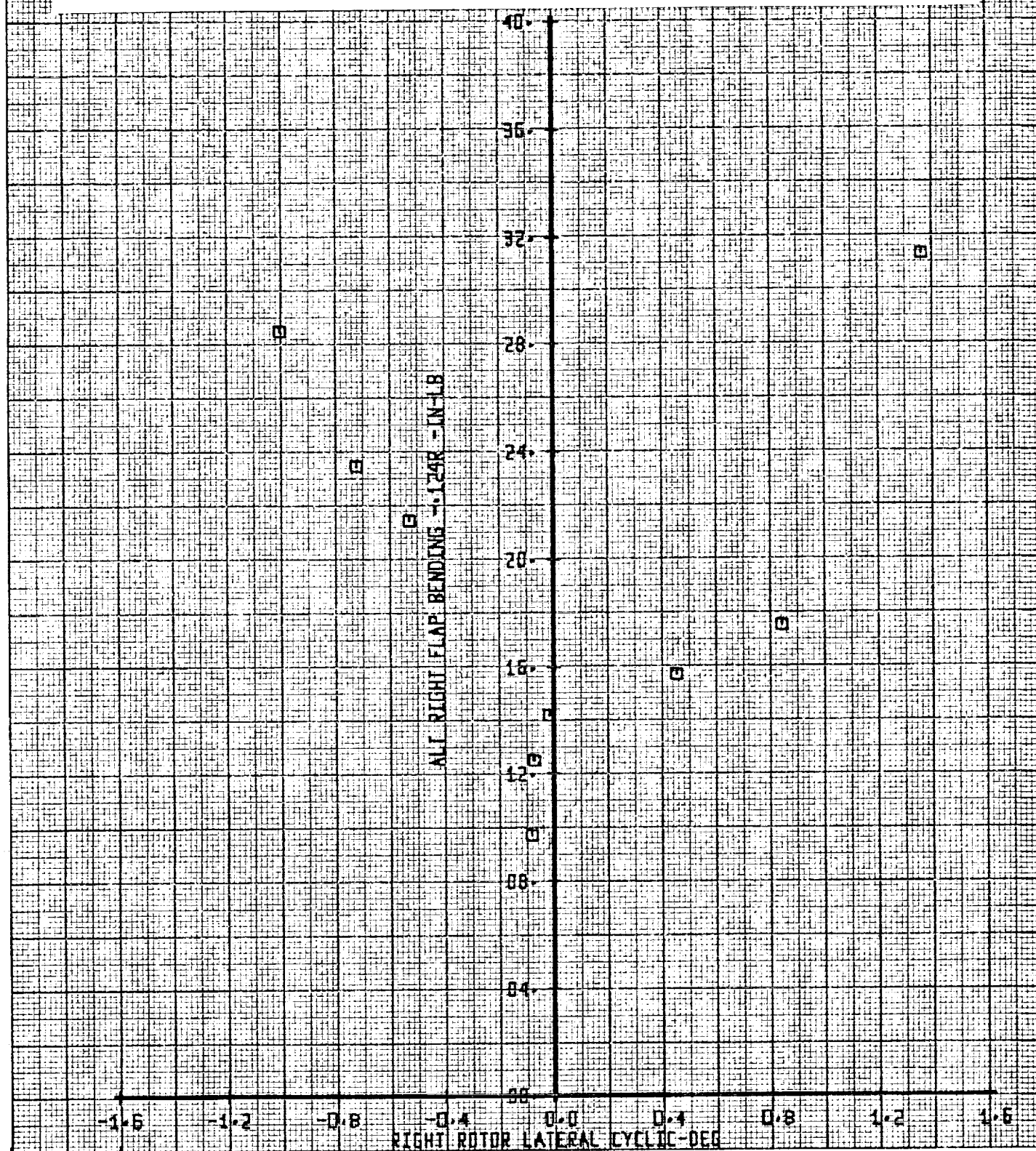


Figure 16-094. Alt. Right Chord Bending Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

BYWT 182 VR0950-1
 TILT ROTOR MODEL
 RIGHT ROTOR DATA

LEGEND
 SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
 □ 149 -1 260 0 0

Figure 16-095. Alt. Right Flap Bending Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



BVWT 182 VR0950-1

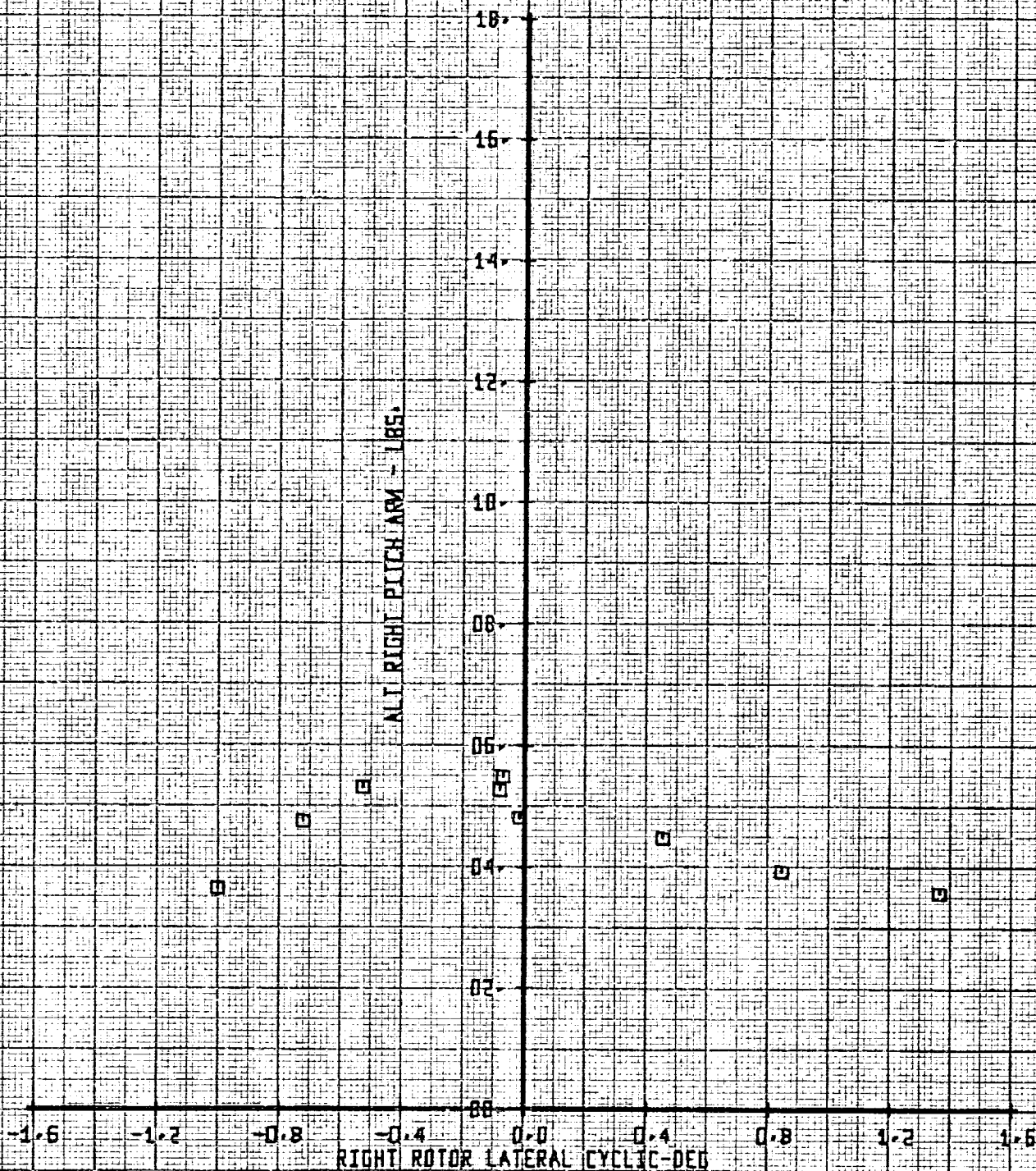
TILT ROTOR MODE

RIGHT ROTOR DATA

LEGEND

SYM
□RUN
149IN-NAC
-1KNOTS-F.S.
260ALPHA-FUS
0FLAP
0

Figure 16-096. Alt. Right Pitch Link Load Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



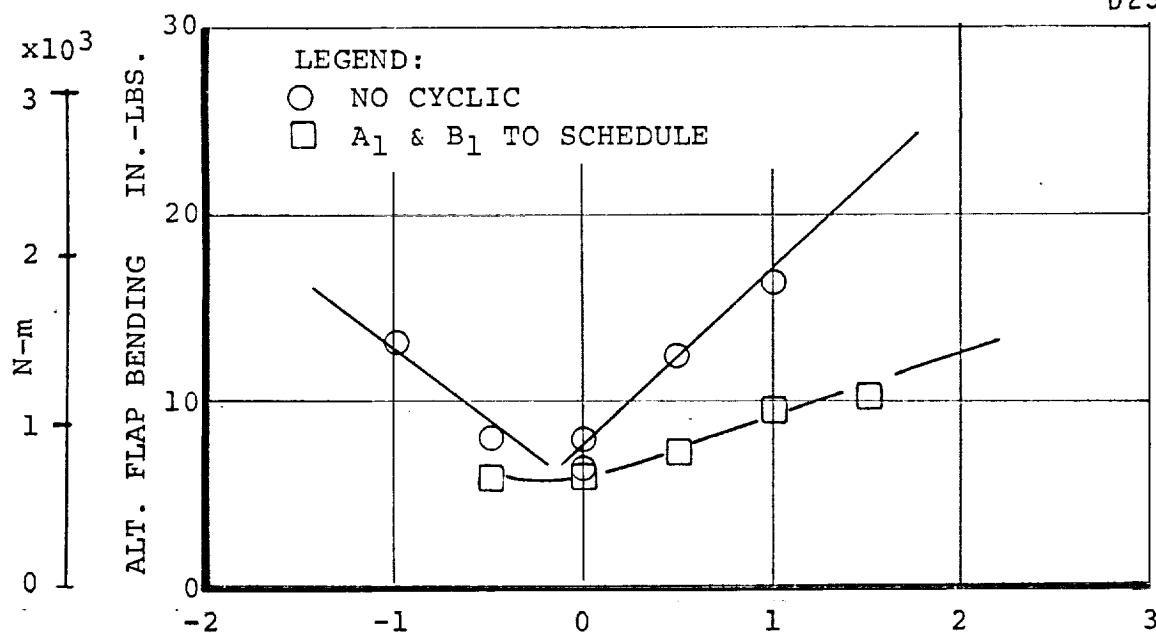


Figure 16-098. Alt. Left Rotor Blade Flap Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

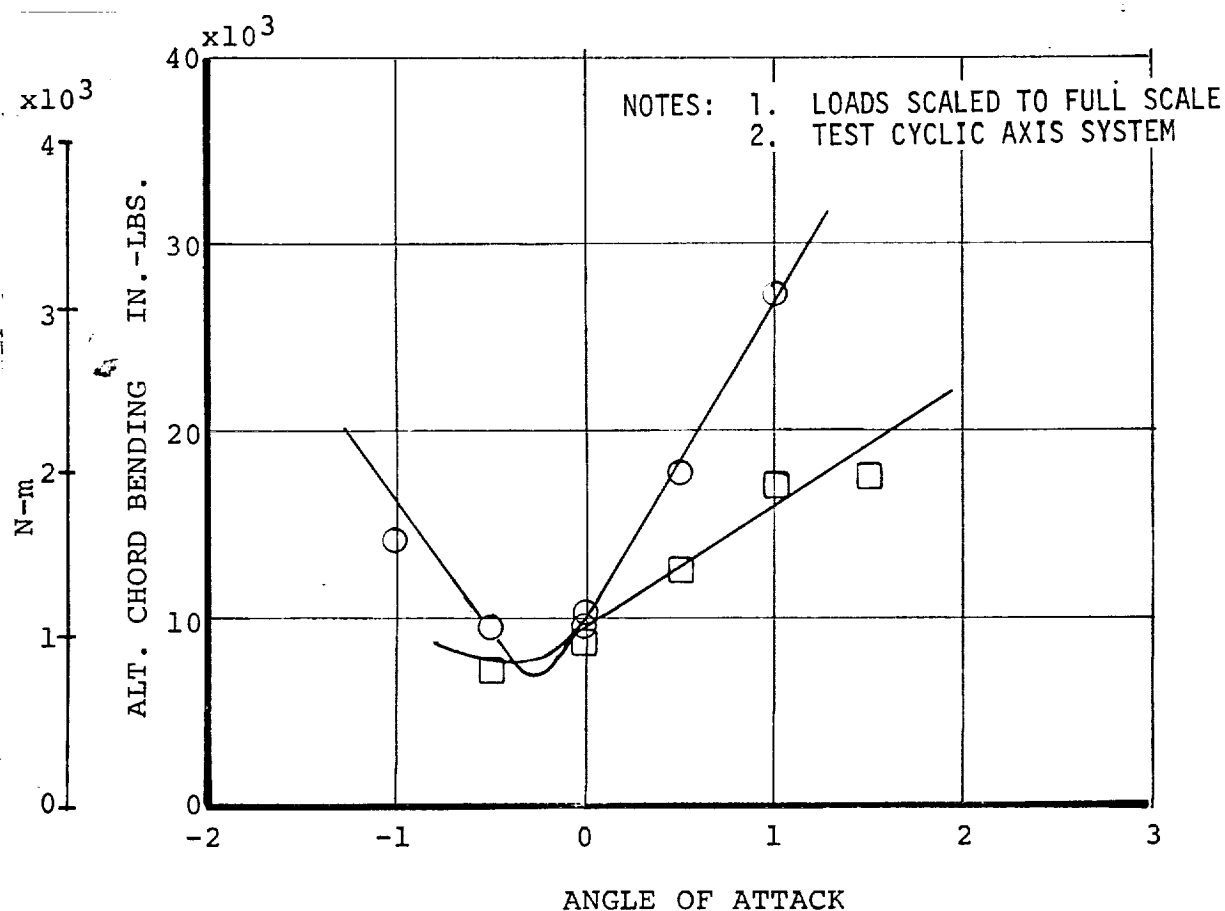


Figure 16-097. Alt. Left Rotor Blade Chord Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

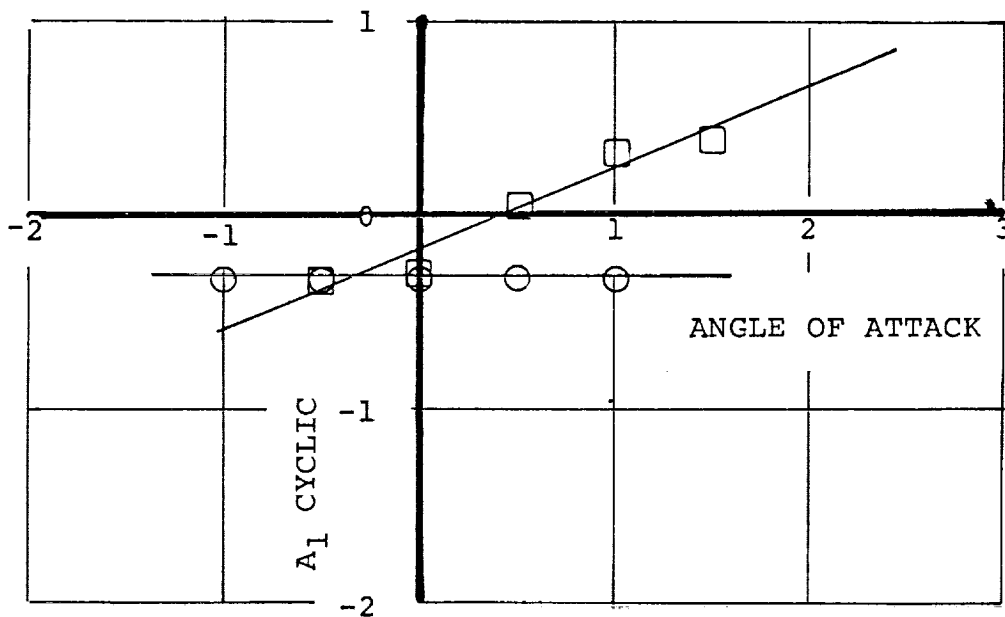
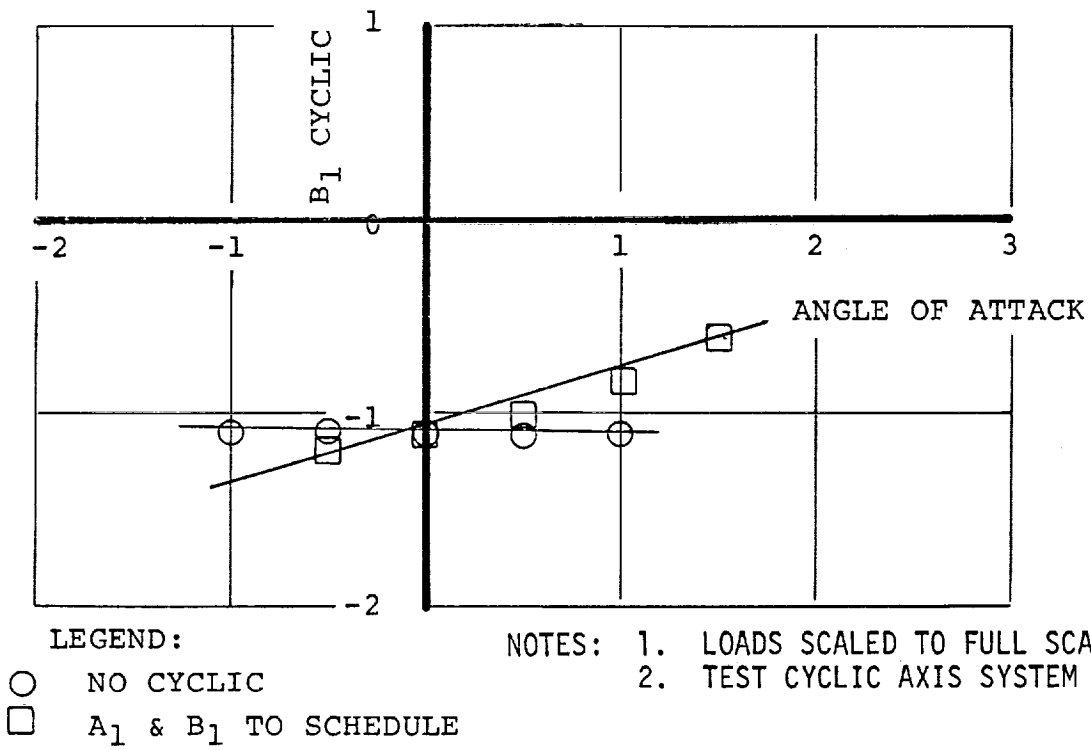


Figure 16-099. Left Rotor Cyclic Schedules. $I_N = -1^\circ$ Full Scale
Airspeed 260 Knots.

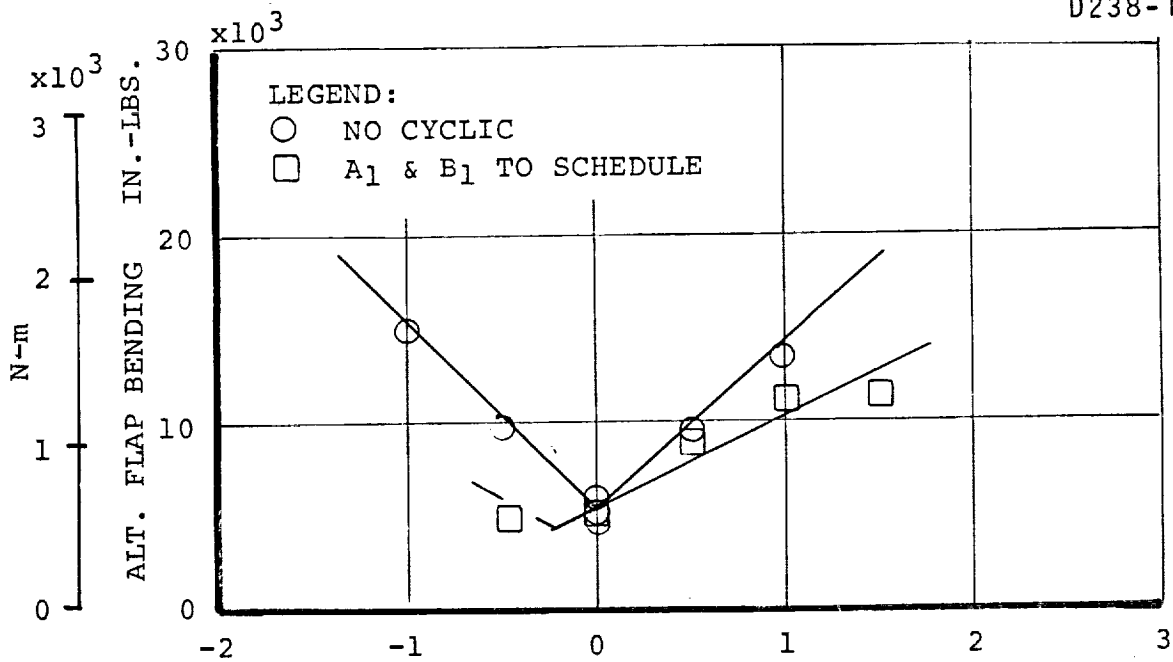


Figure 16-101. Alt. Right Rotor Blade Flap Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.

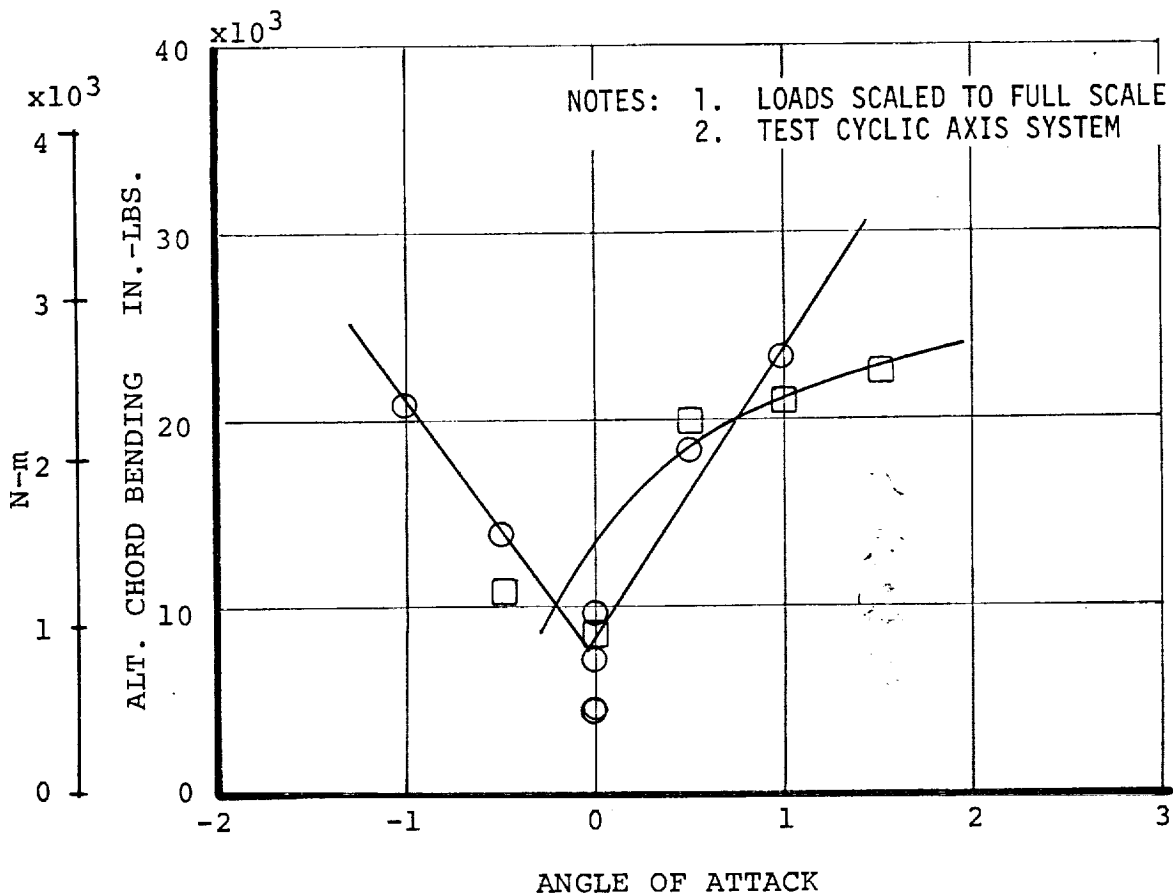
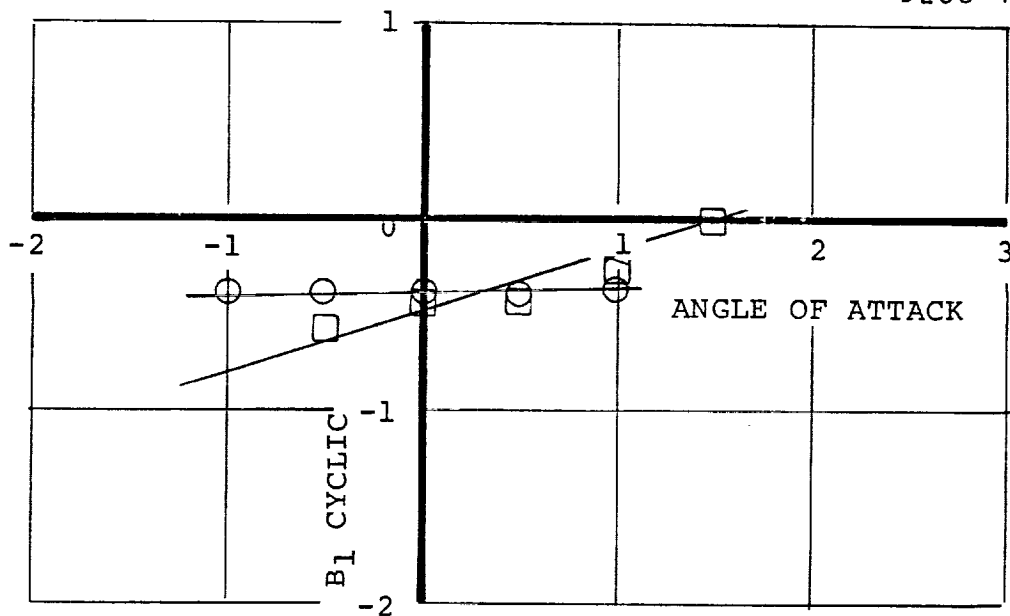


Figure 16-100. Alt. Right Rotor Blade Chord Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 260 Knots.



LEGEND:
 ○ NO CYCLIC
 □ A_1 & B_1 TO SCHEDULE

NOTES: 1. LOADS SCALED TO FULL SCALE
 2. TEST CYCLIC AXIS SYSTEM

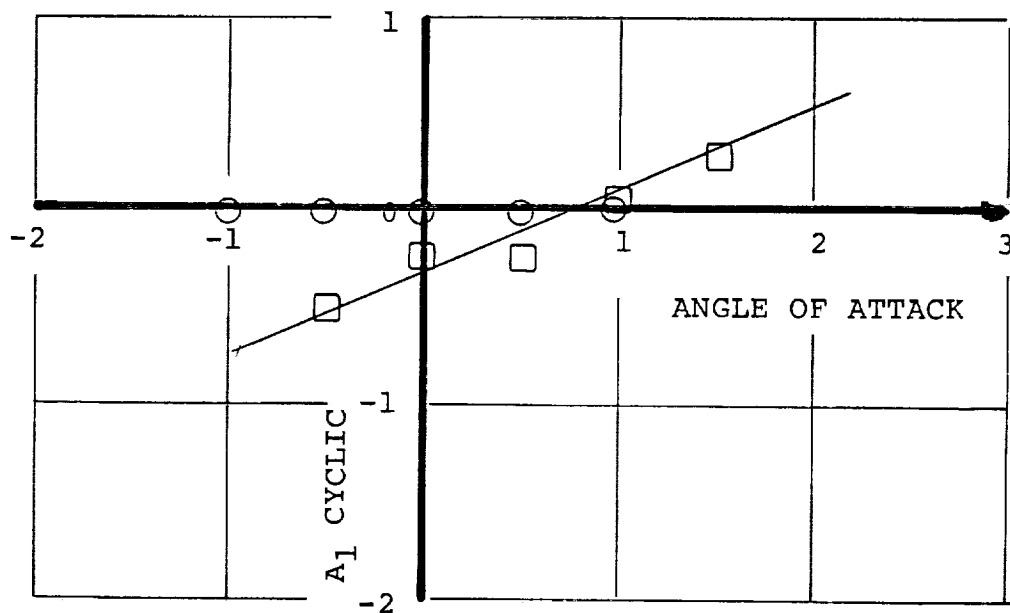


Figure 16-102. Right Rotor Cyclic Schedules. $I_N = -1^\circ$ Full Scale
 Airspeed 260 Knots.

$$I_N = -10 \text{ VFS} = 300 \text{ KTS.}$$

BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

153

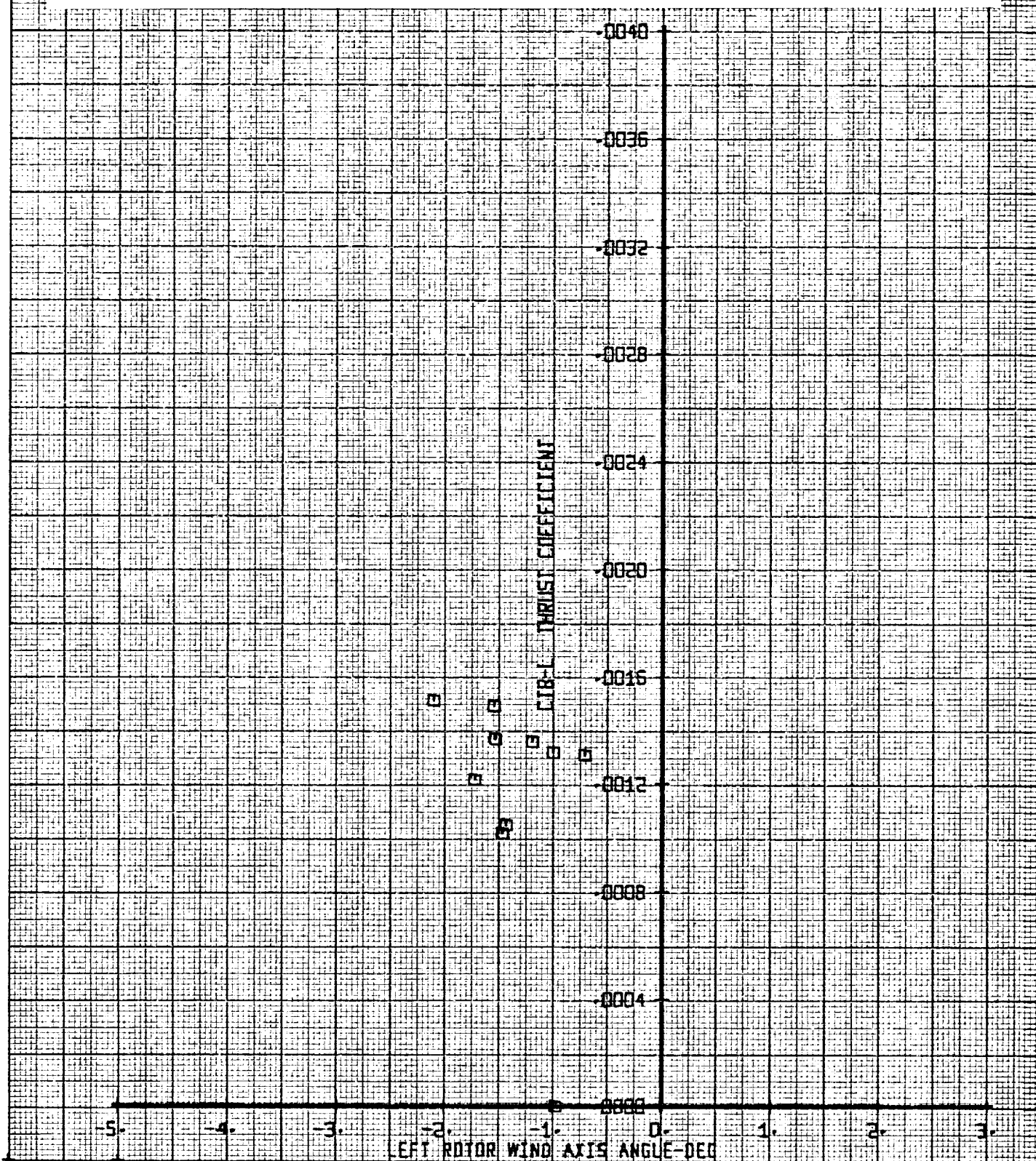
-1

300

VARY

0

Figure 17-001. Left Rotor Thrust Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



LEFT ROTOR WIND AXIS ANGLE-DEG

BVWT 182 VR0950-1

TILT ROTOR MODE

LEFT ROTOR DATA

SYM

0

RUN

153

LEGEND

IN-NAC

-1

KNOTS-F.S.

300

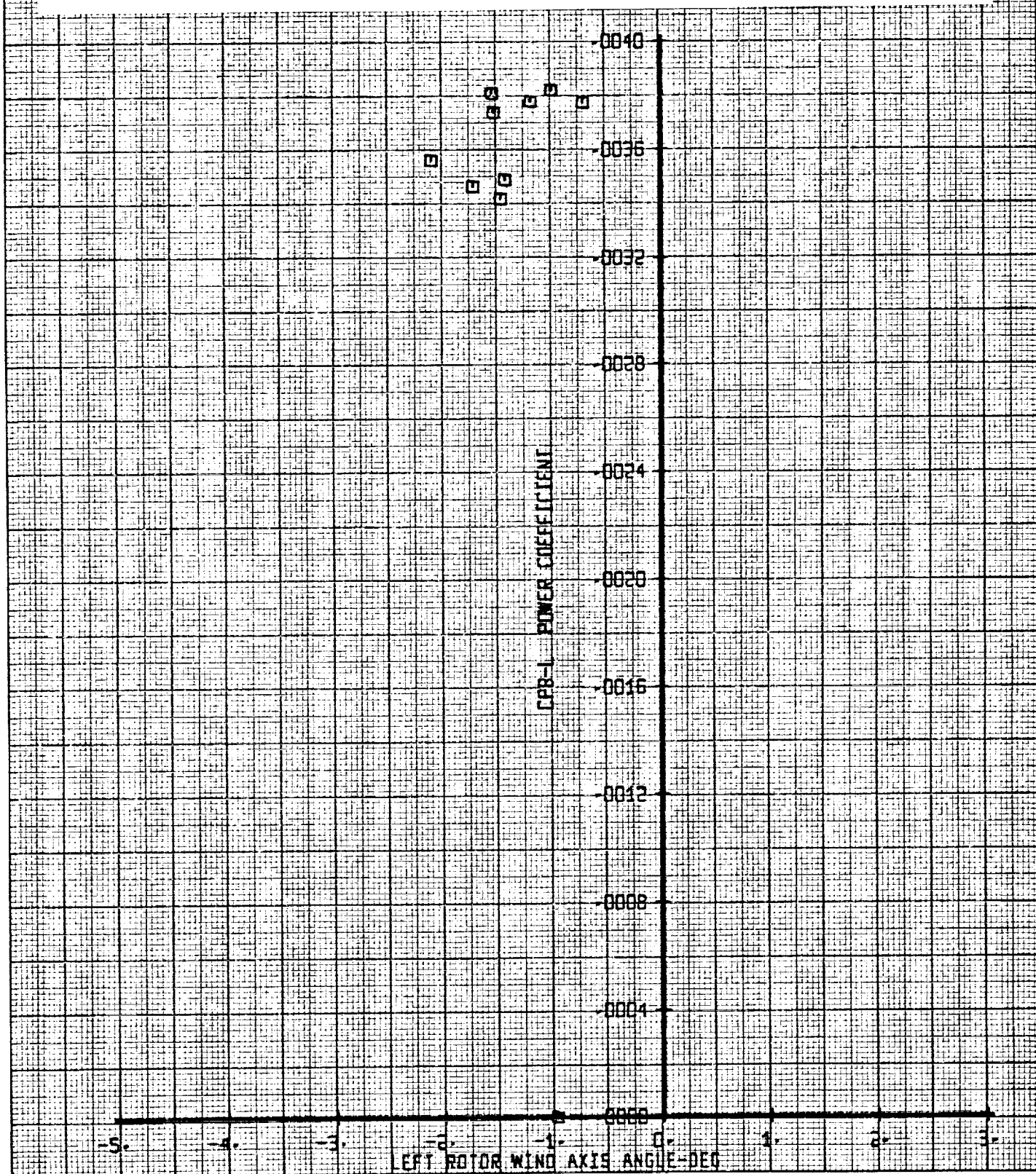
ALPHA-DEG

VARY

FLAP

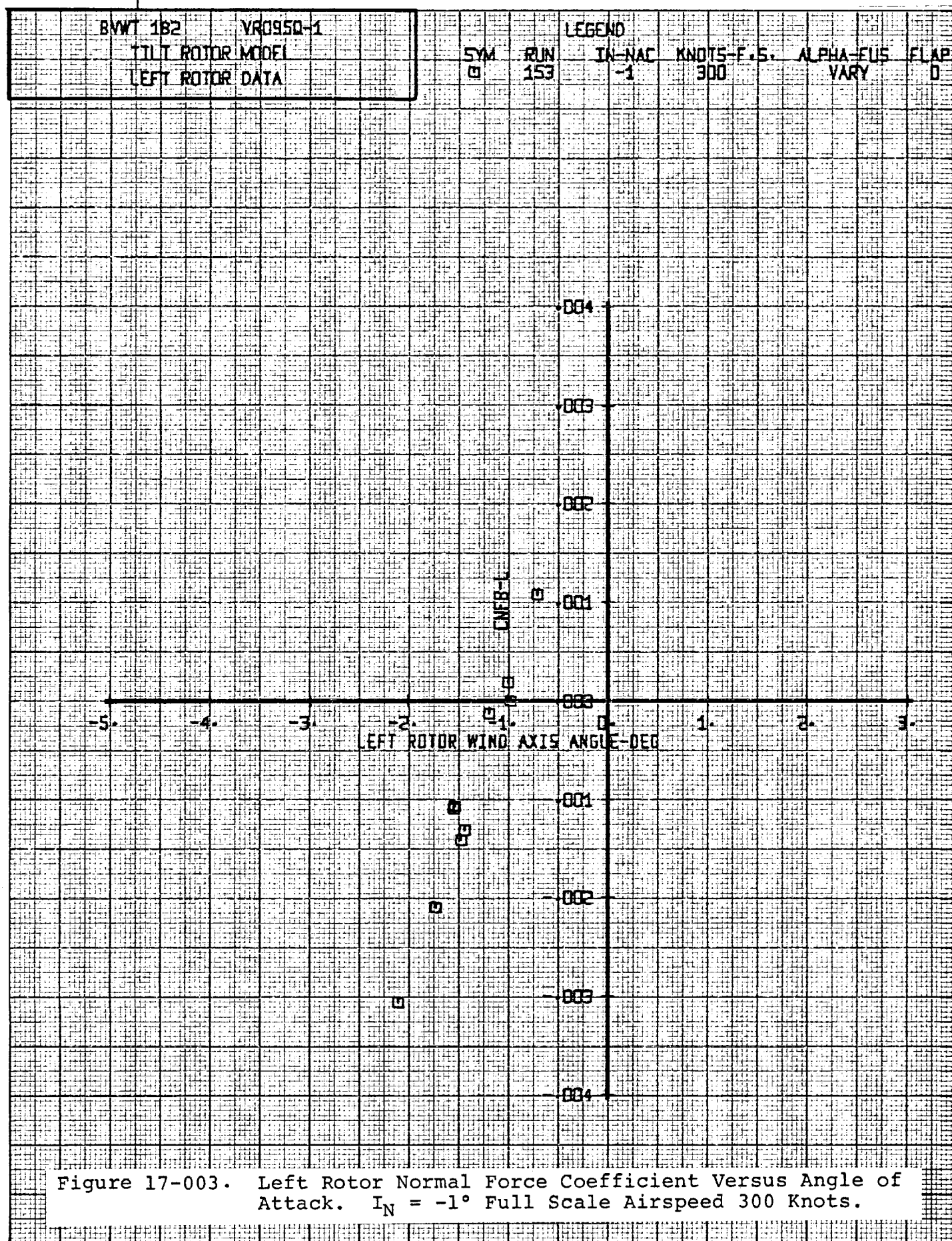
0

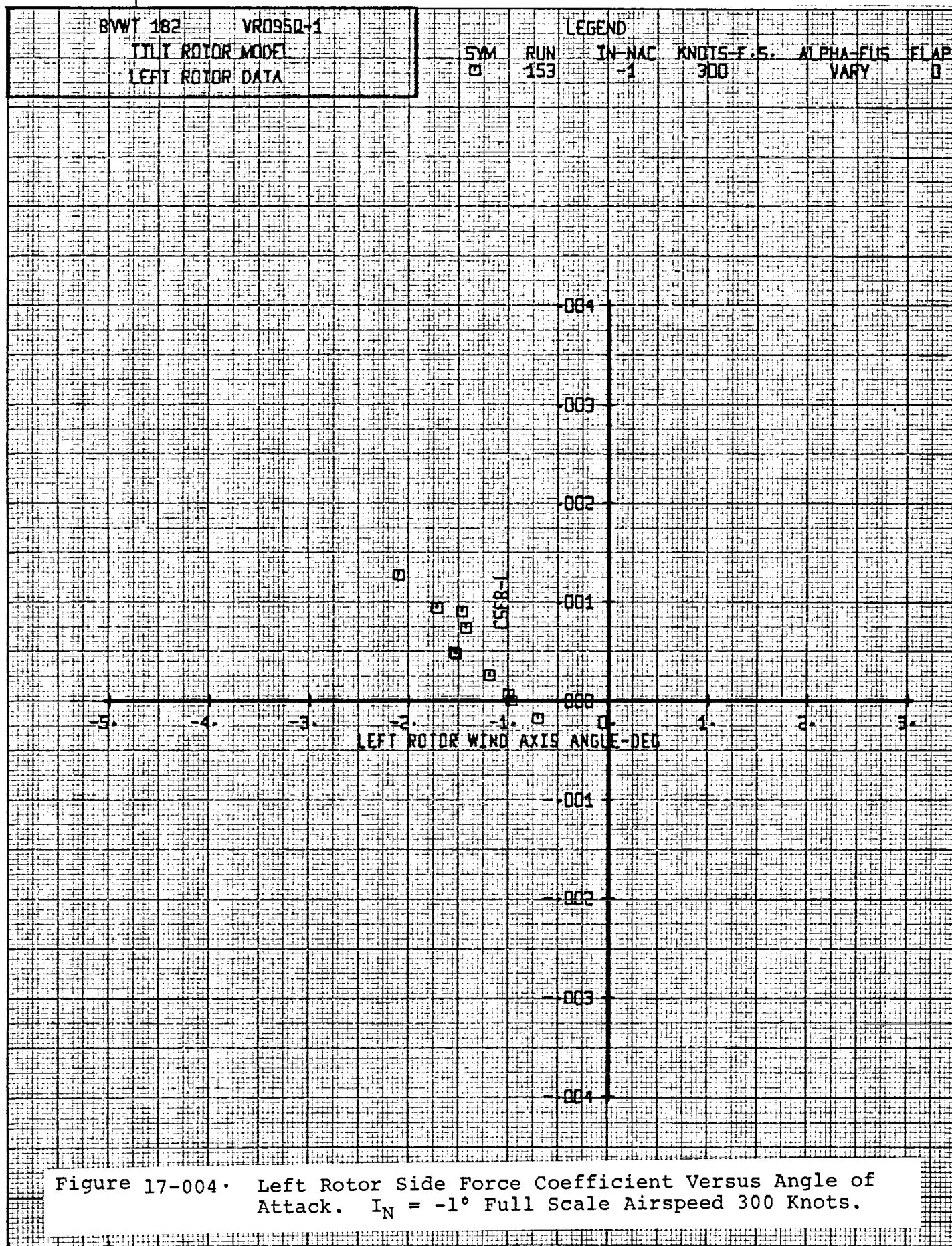
Figure 17-002. Left Rotor Power Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

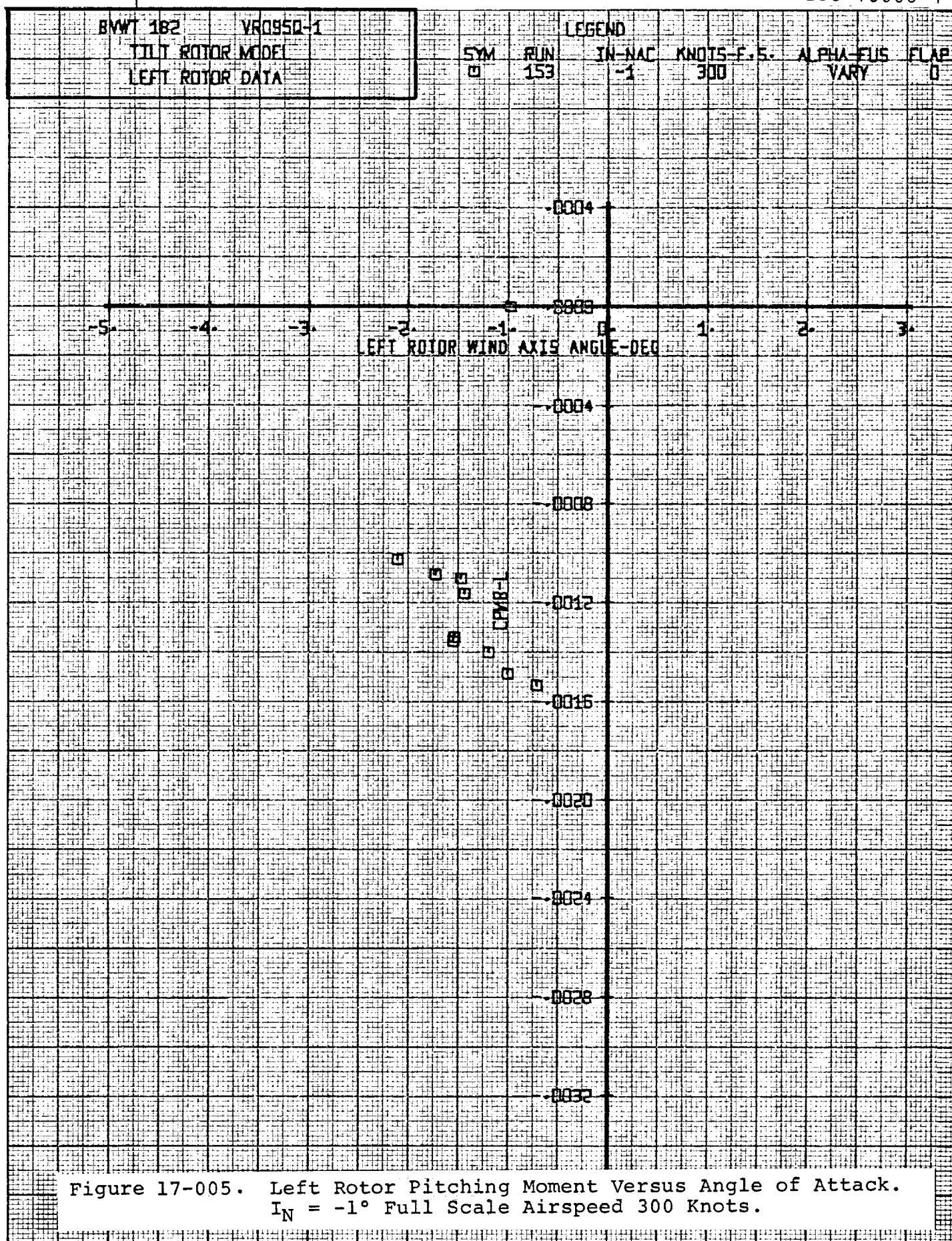


420

SET 104
BVWT 182







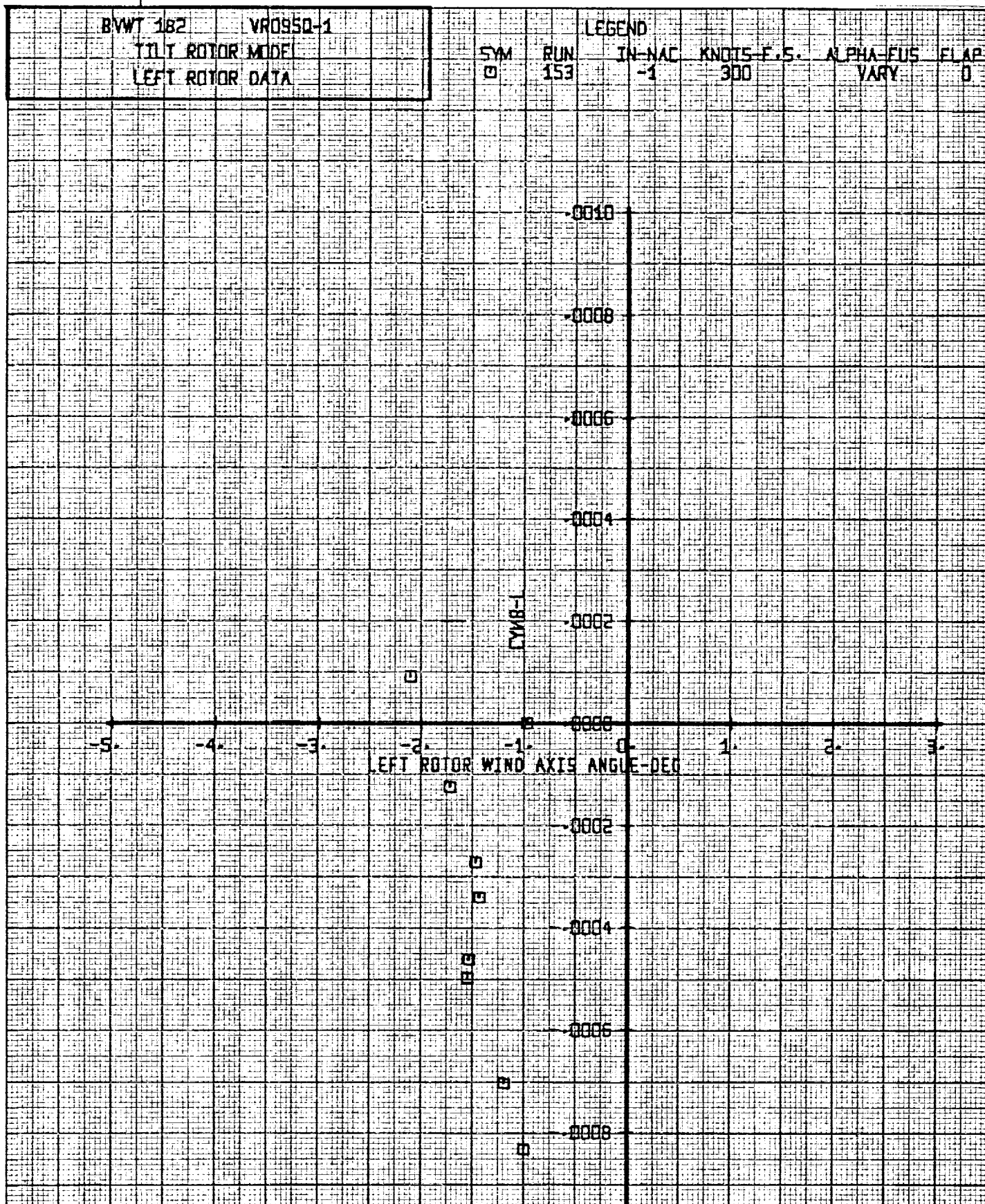


Figure 17-006. Left Rotor Yawing Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

BVWT 182 VRO950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM

RUN

LEGEND

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

153

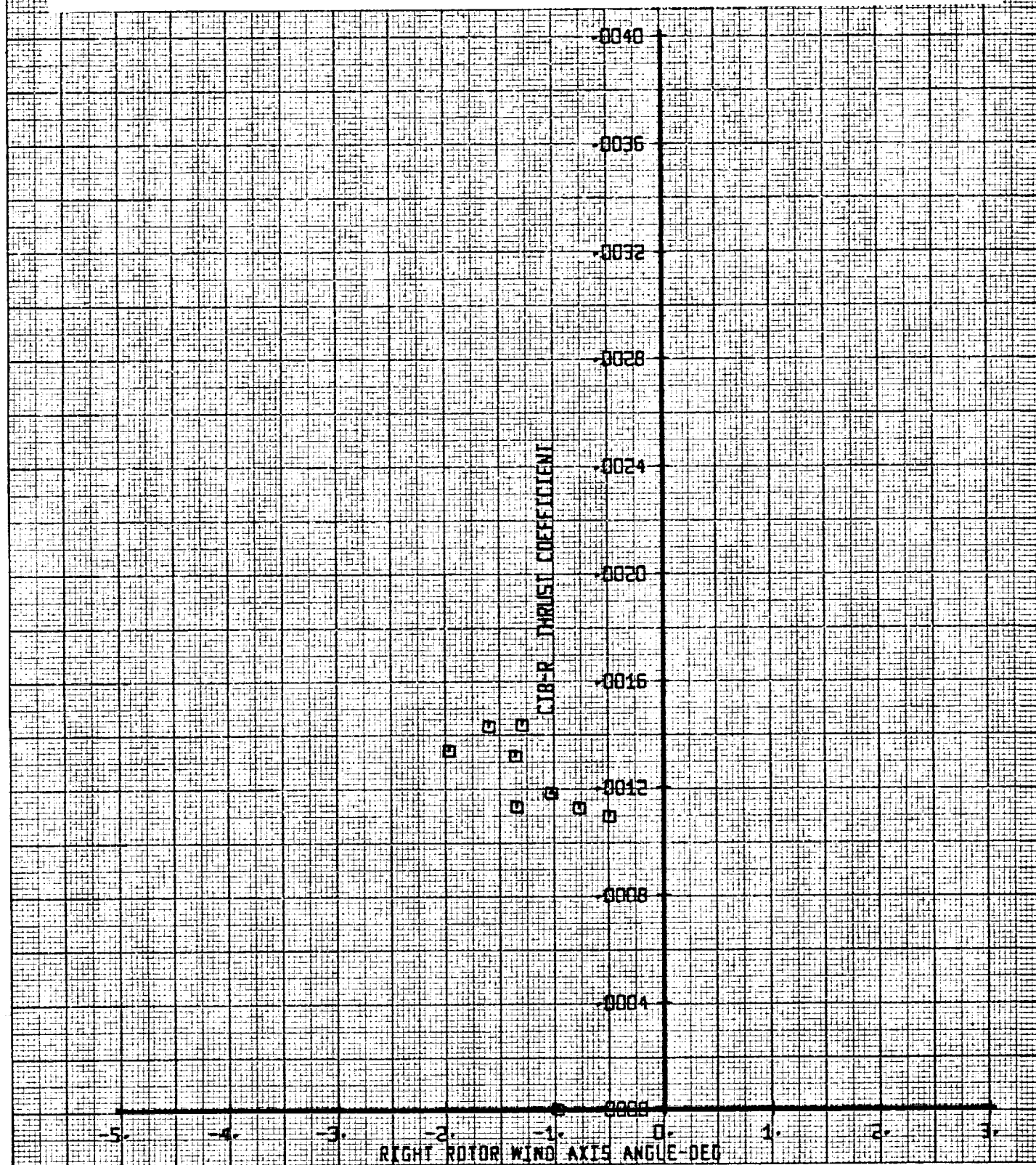
-1

300

VARY

0

Figure 17-007. Right Rotor Thrust Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



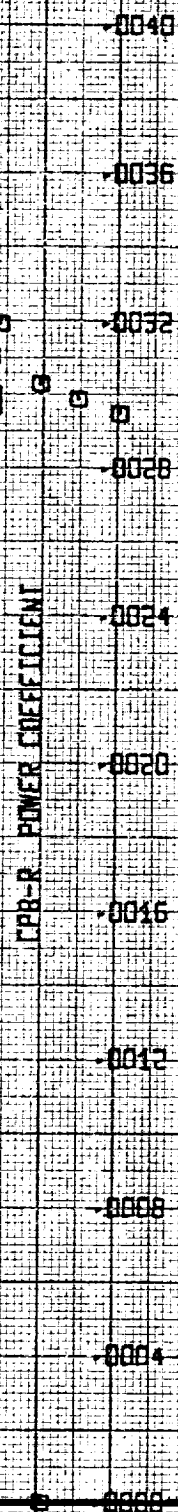
BVWT 182 VR0950-1

TIT ROTOR MODE
RIGHT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-DEG	FLAP
□	153	-1	300	VARY	0

Figure 17-008. Right Rotor Power Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



RIGHT ROTOR WIND AXIS ANGLE-DEG

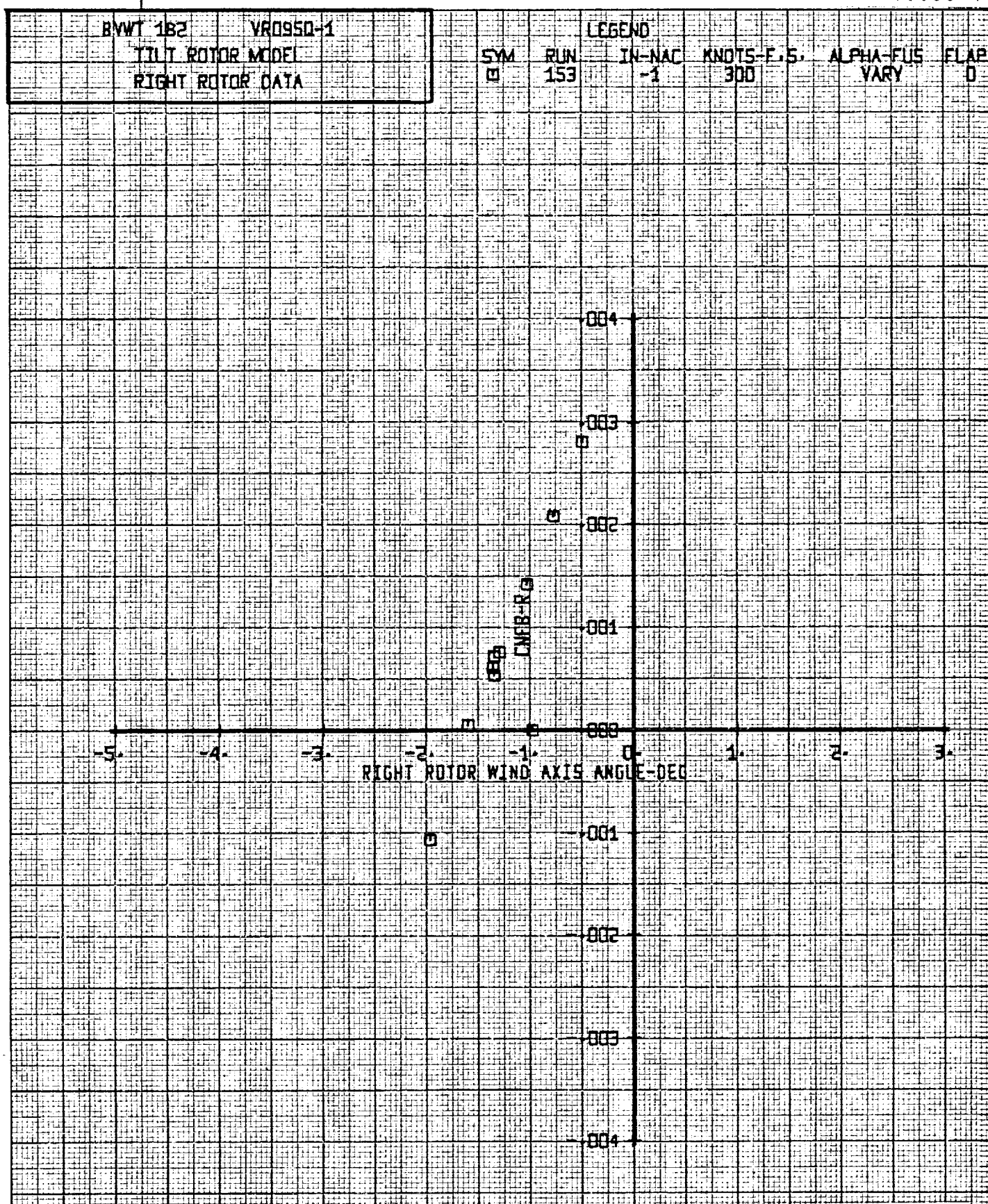
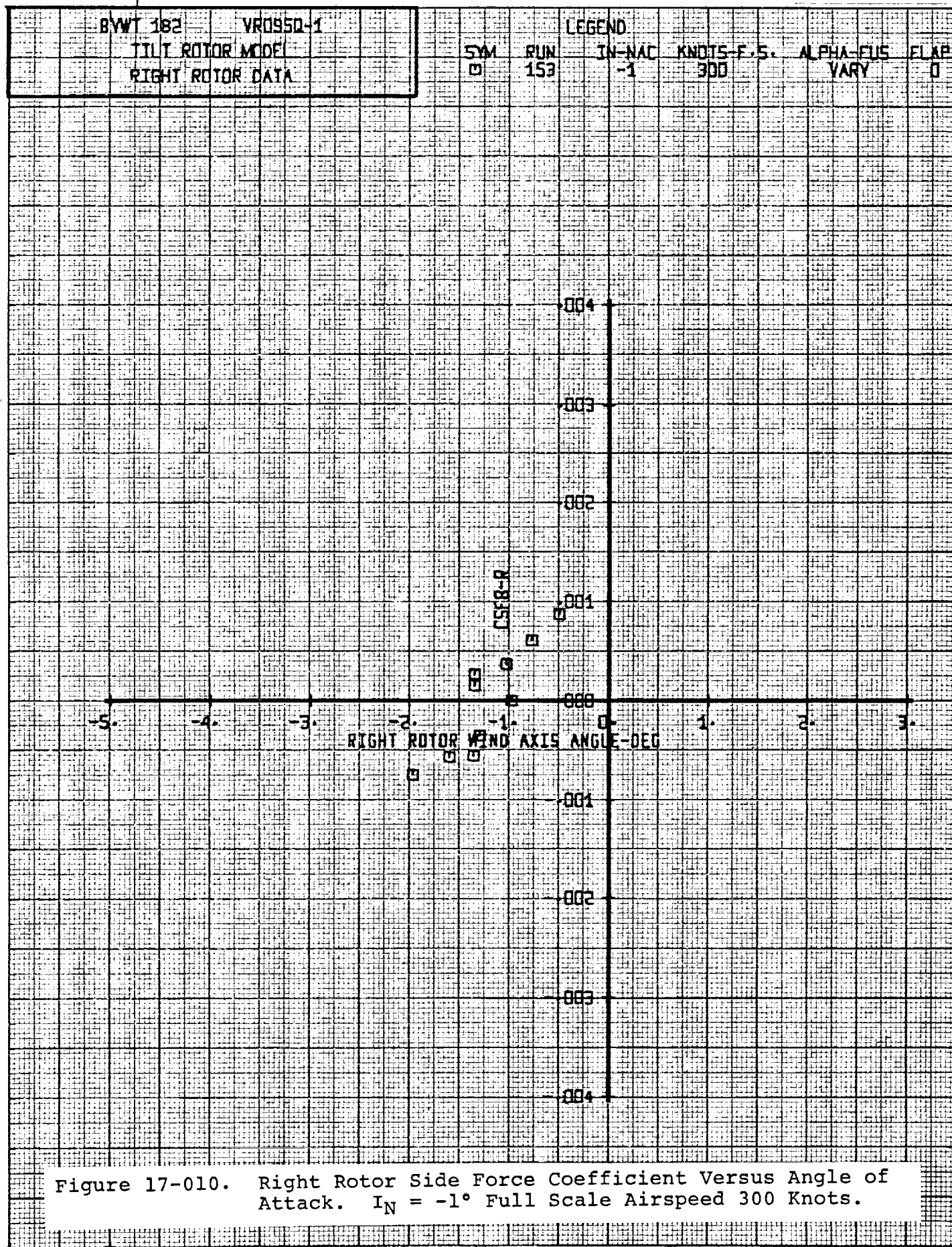


Figure 17-009. Right Rotor Normal Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



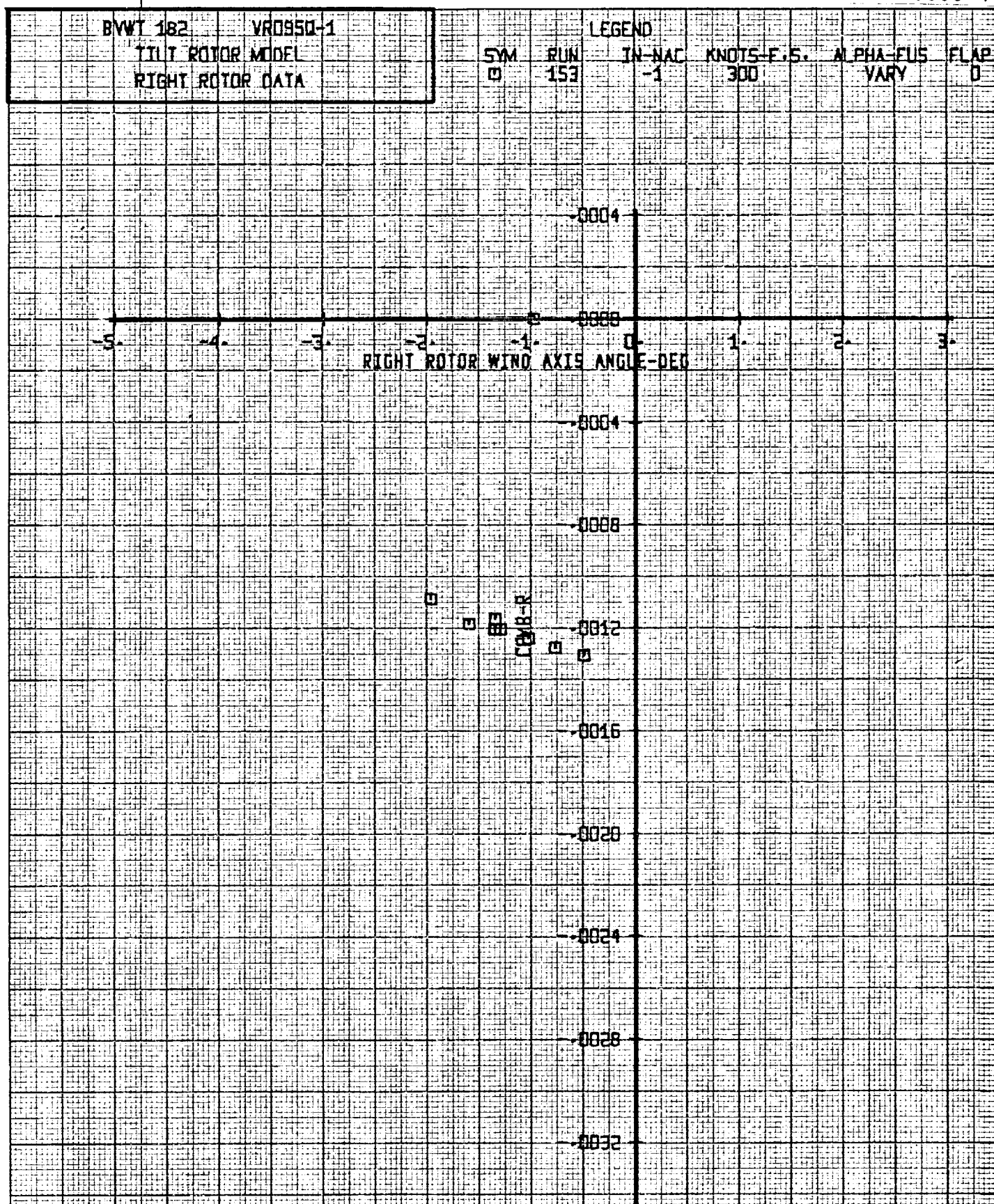


Figure 17-011. Right Rotor Pitching Moment Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

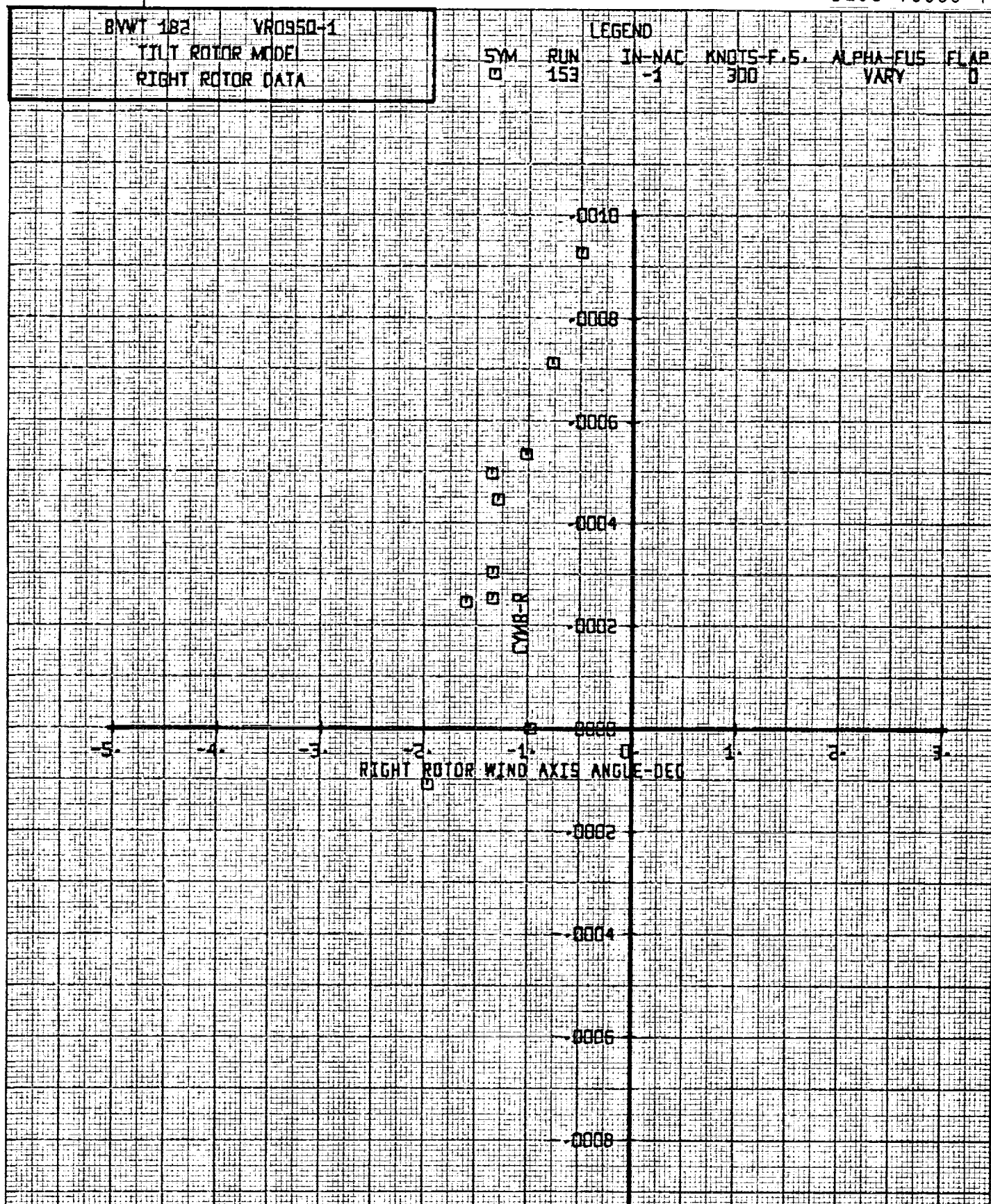


Figure 17-012. Right Rotor Yawing Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

BWWT 1B2

VR0950-1

TILT ROTOR MODEL

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

153

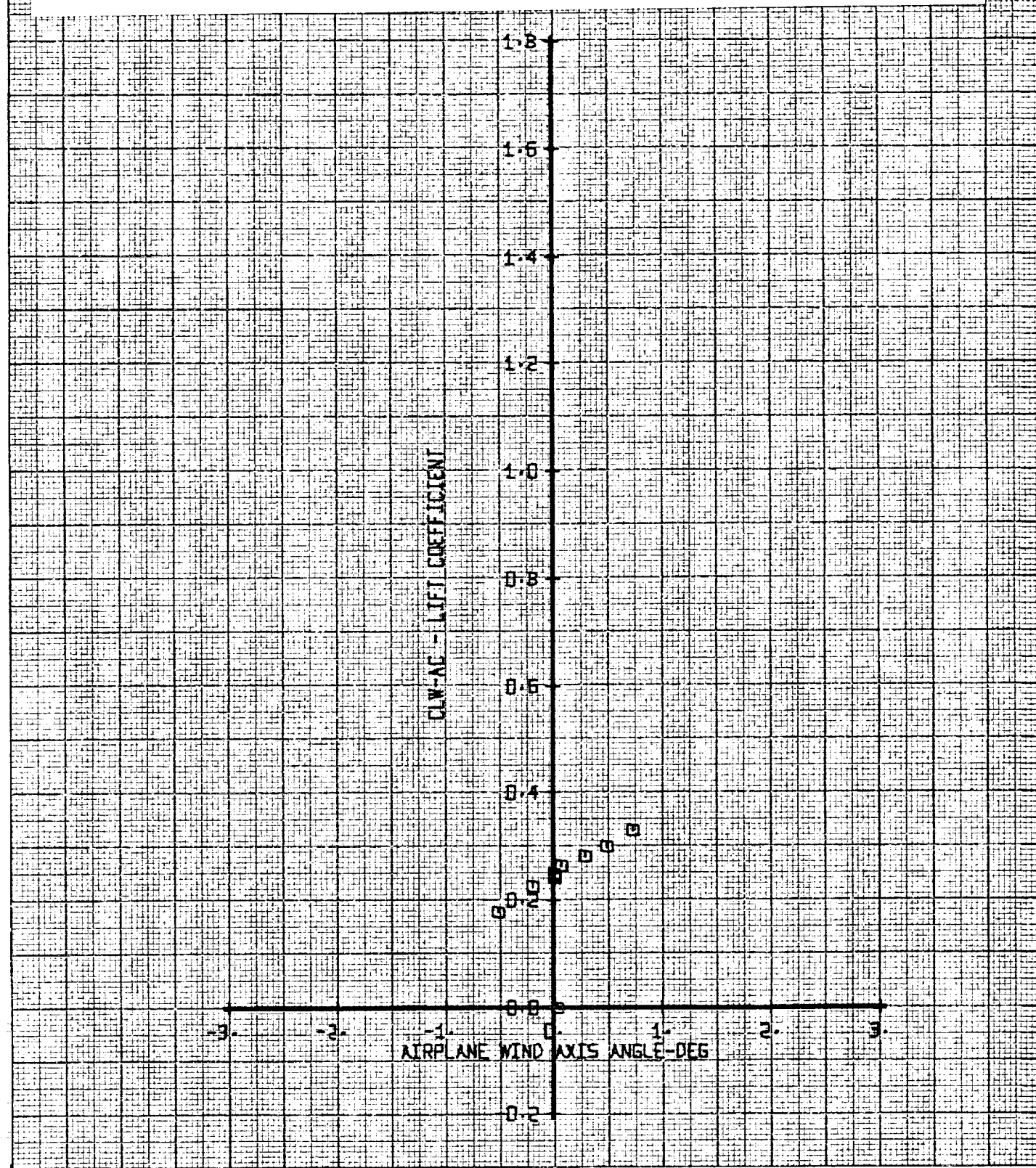
-1

300

VARY

0

Figure 17-013. Aircraft Lift Coefficient Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



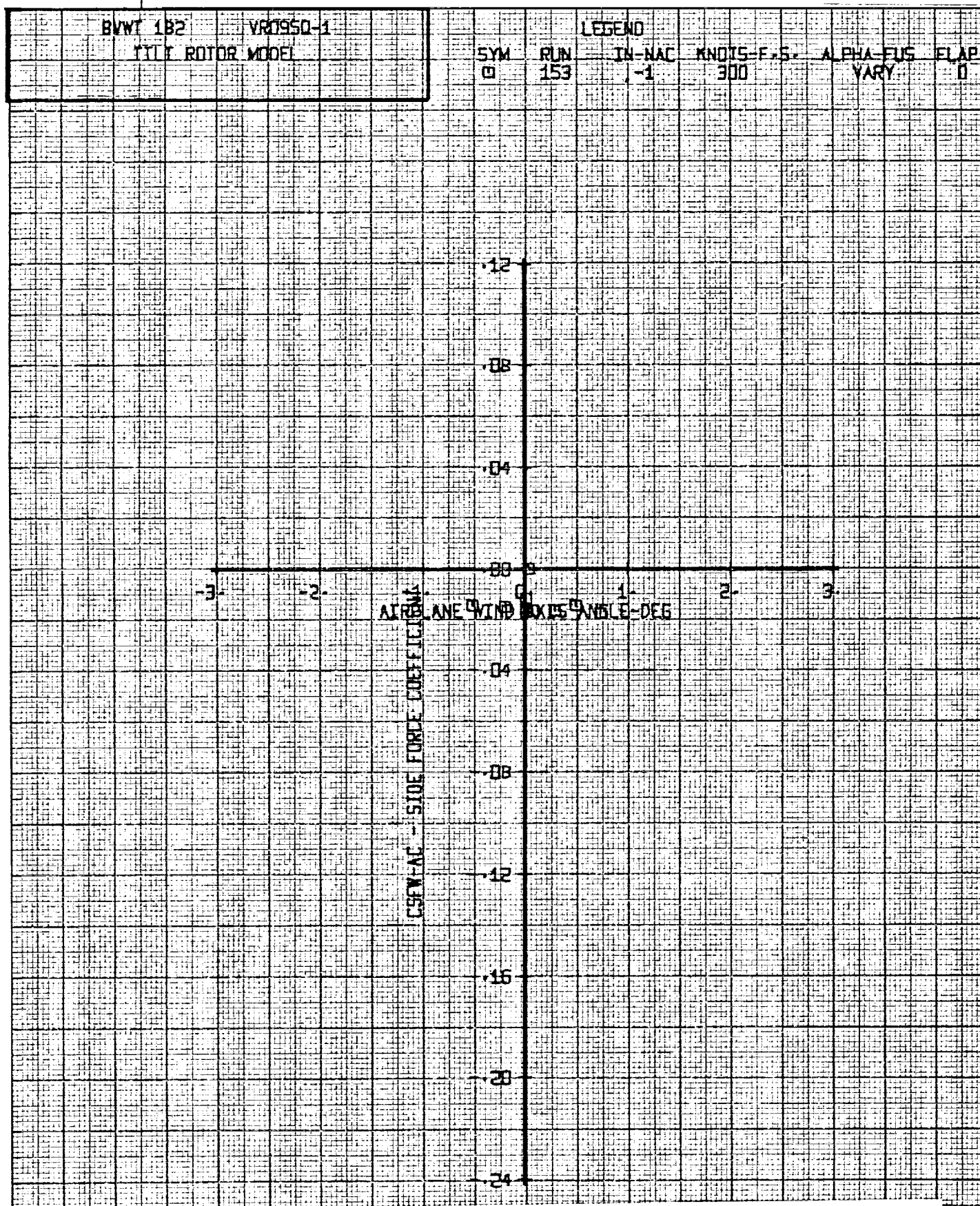


Figure 17-014. Aircraft Side Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

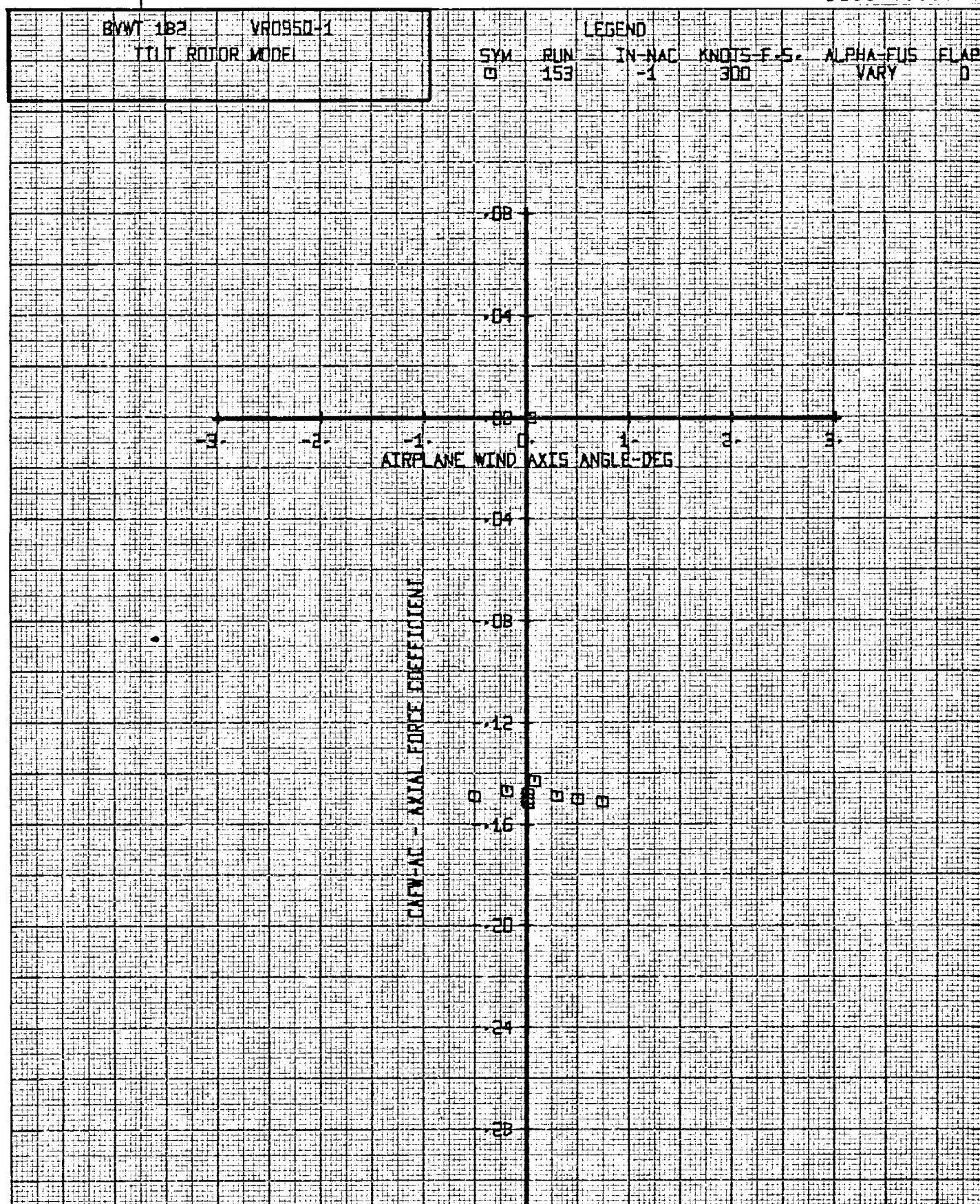


Figure 17-015. Aircraft Axial Force Coefficient Versus Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

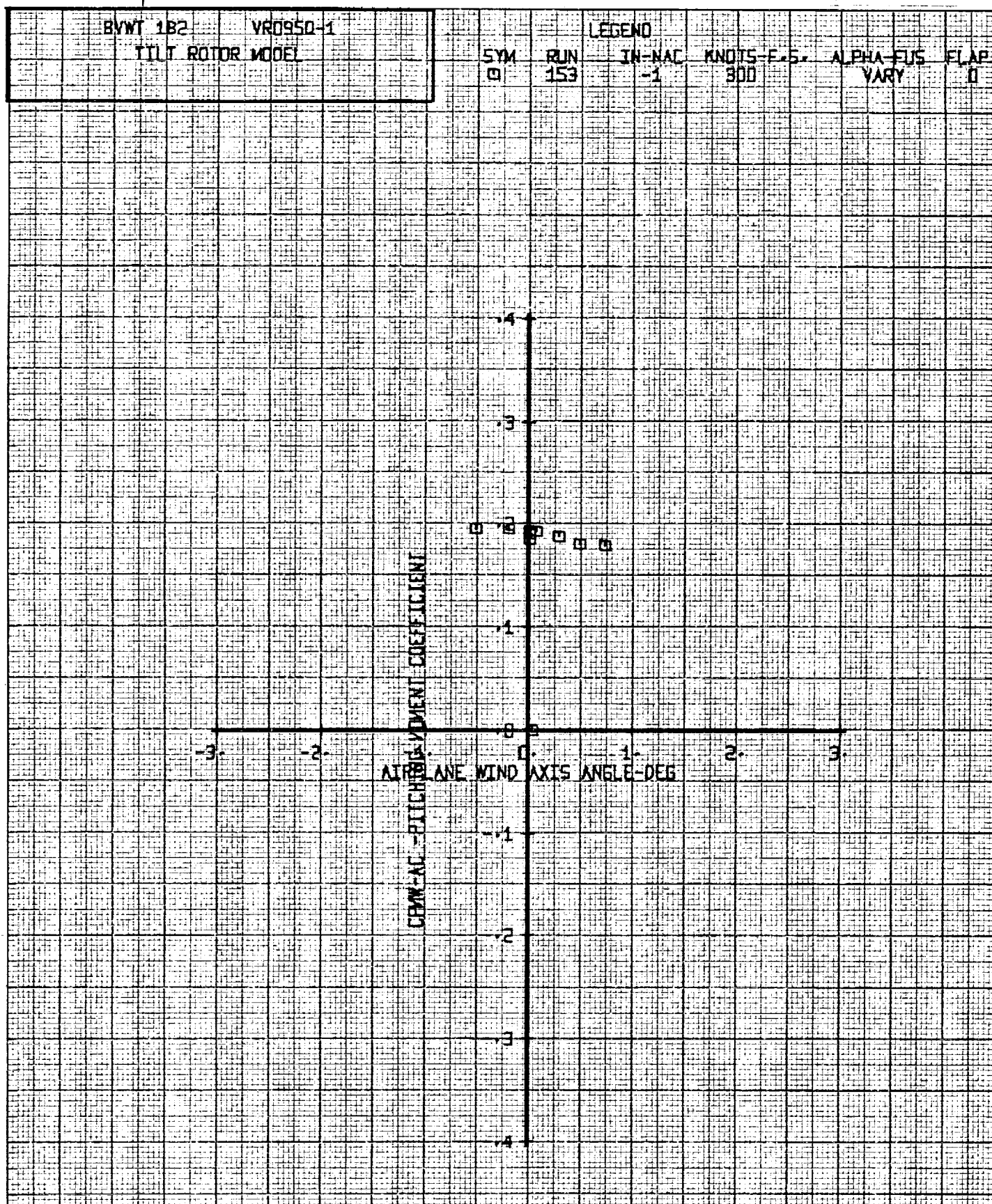


Figure 17-016. Aircraft Pitching Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

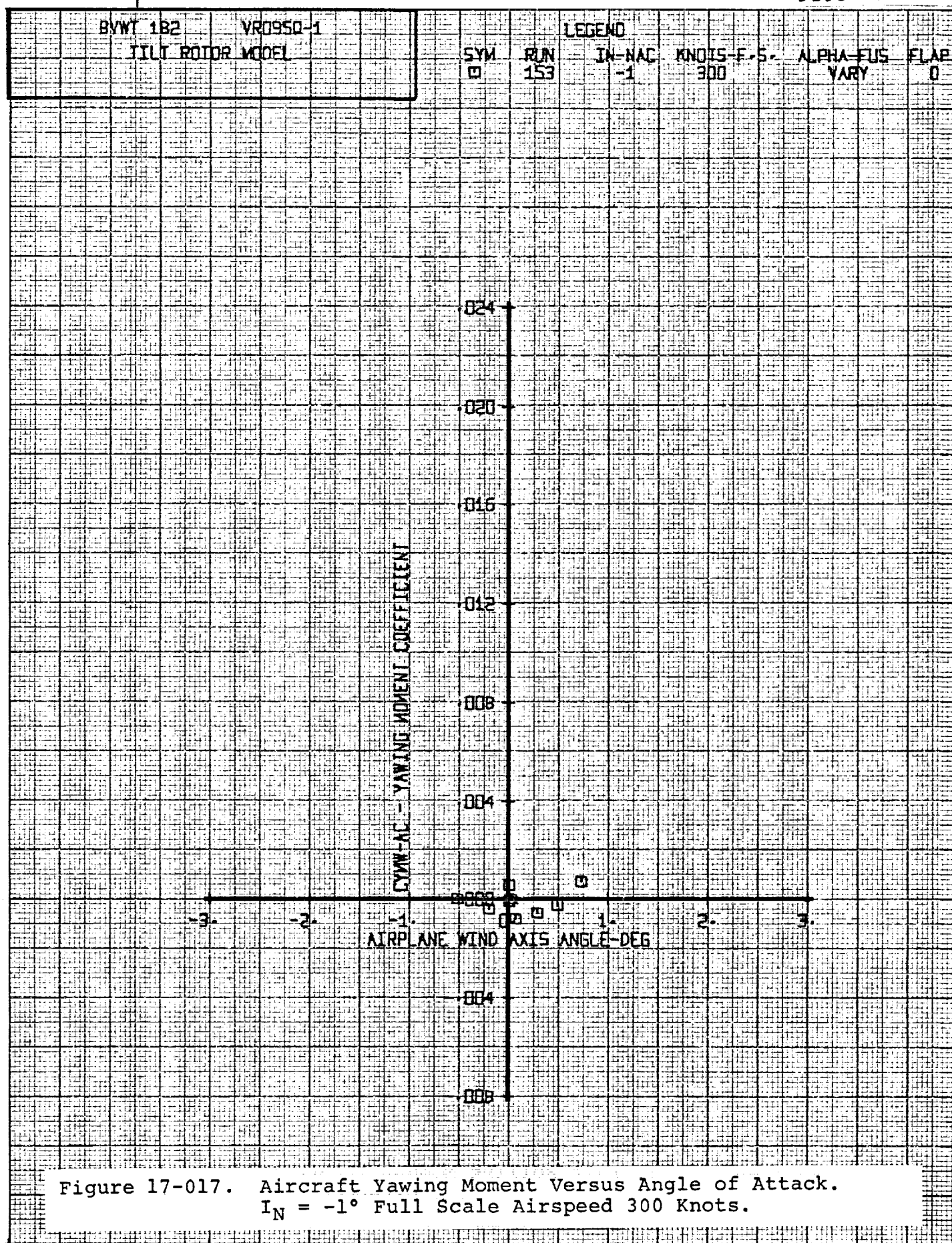


Figure 17-017. Aircraft Yawing Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

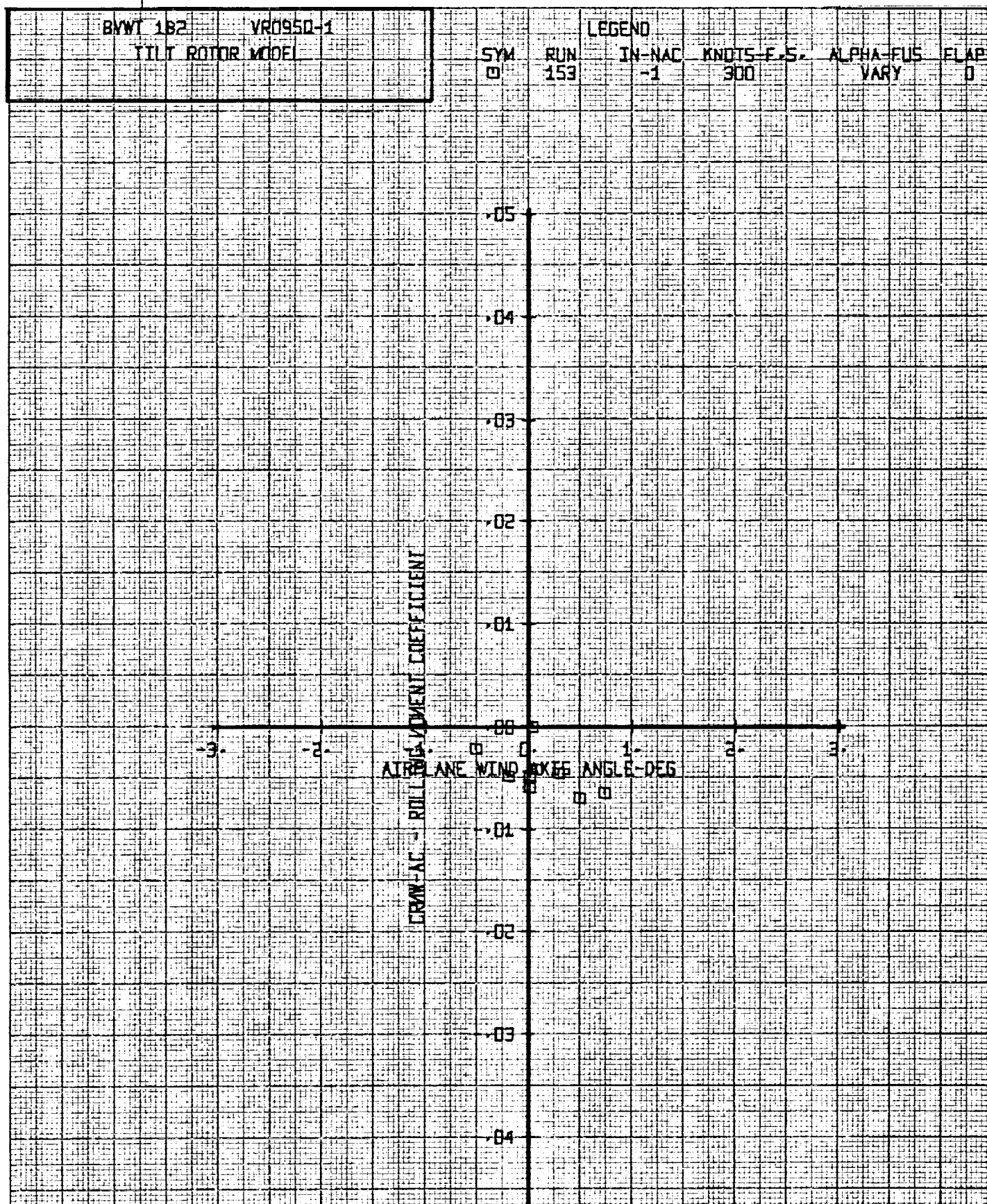
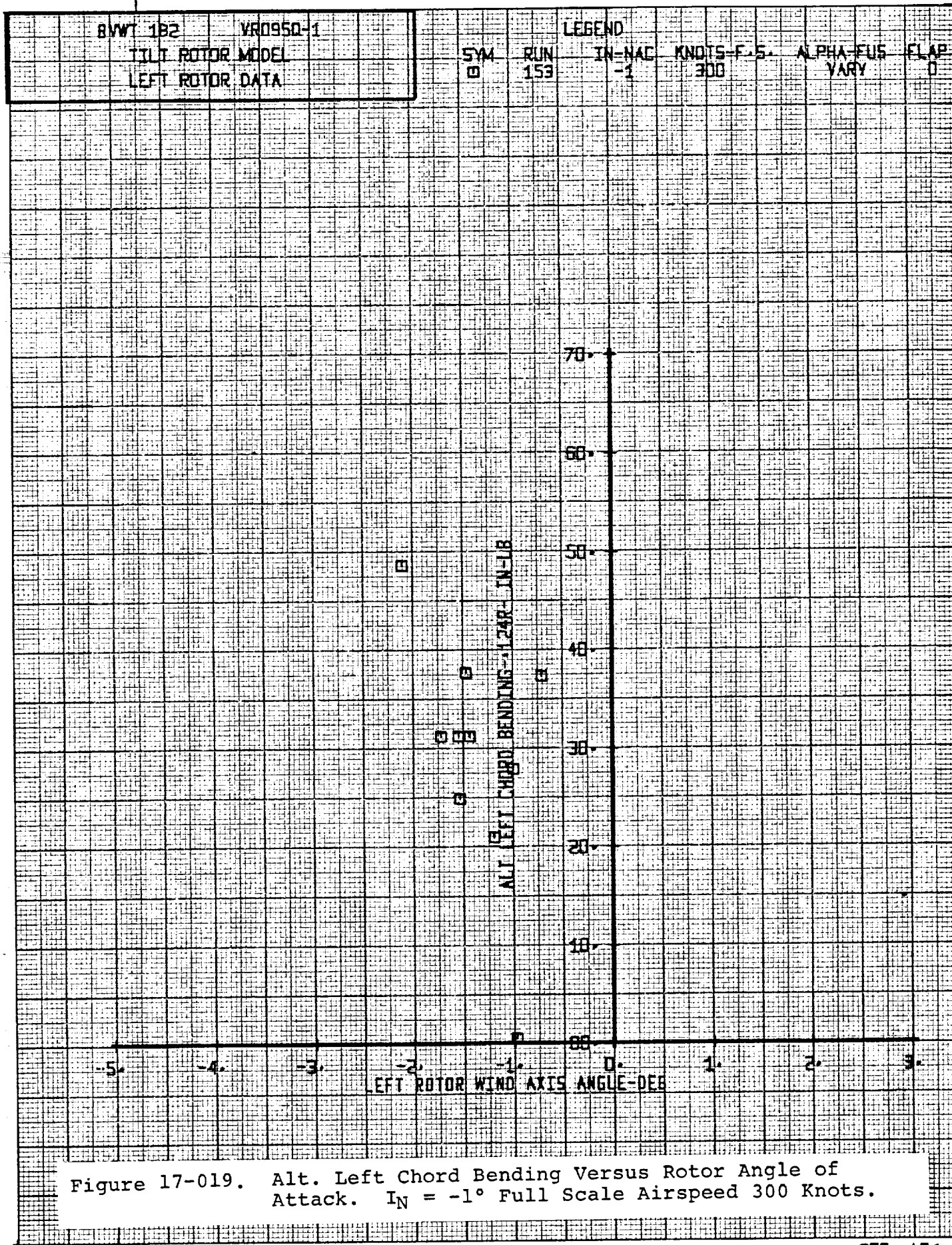


Figure 17-018. Aircraft Rolling Moment Versus Angle of Attack.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



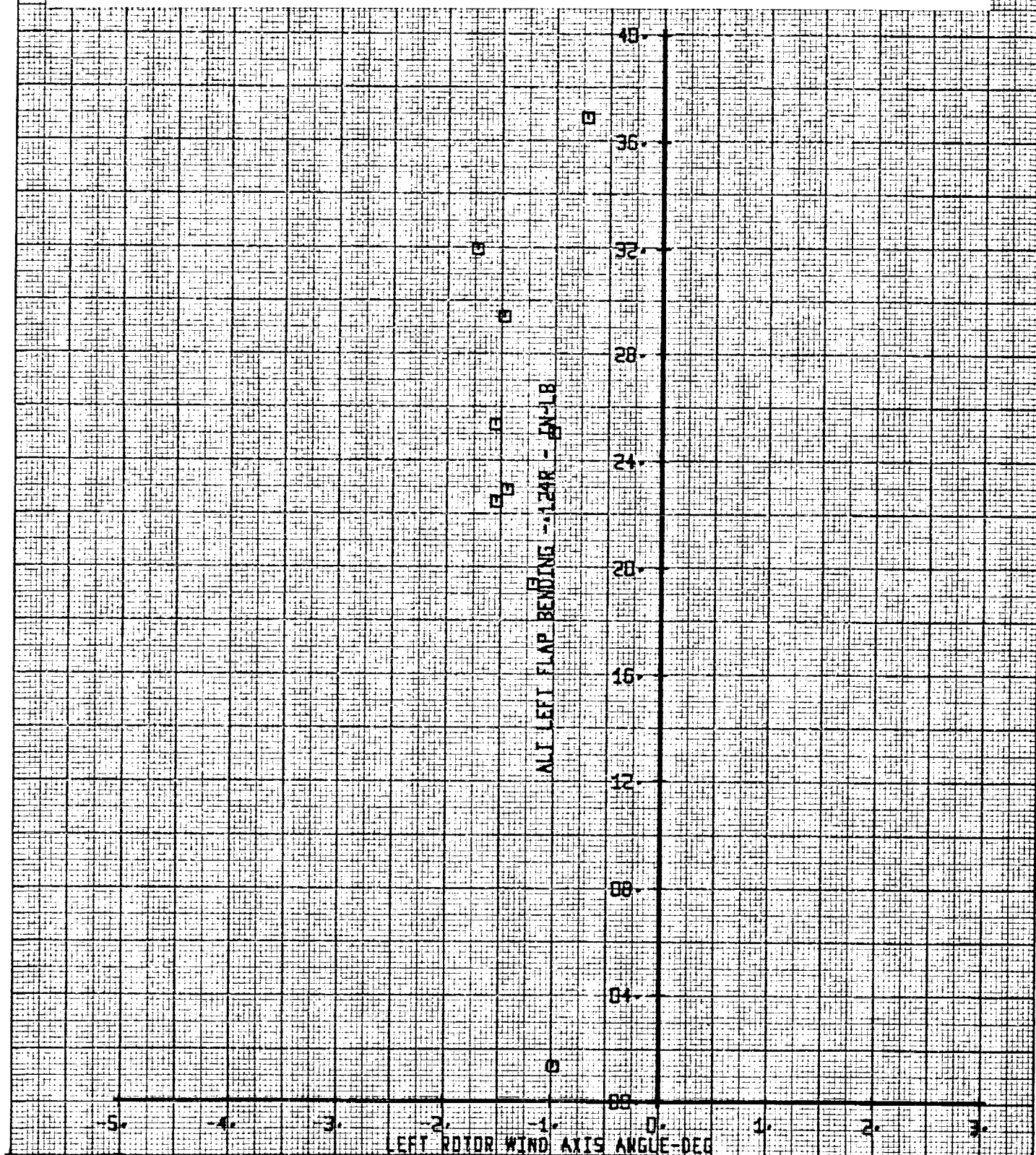
BVWT 182 VR0950-1

TILT ROTOR MODEL
LEFT ROTOR DATA

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	153	-1	300	VARY	0

Figure 17-020. Alt. Left Flap Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



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 SET 104
 BVWT 182

BWWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

153

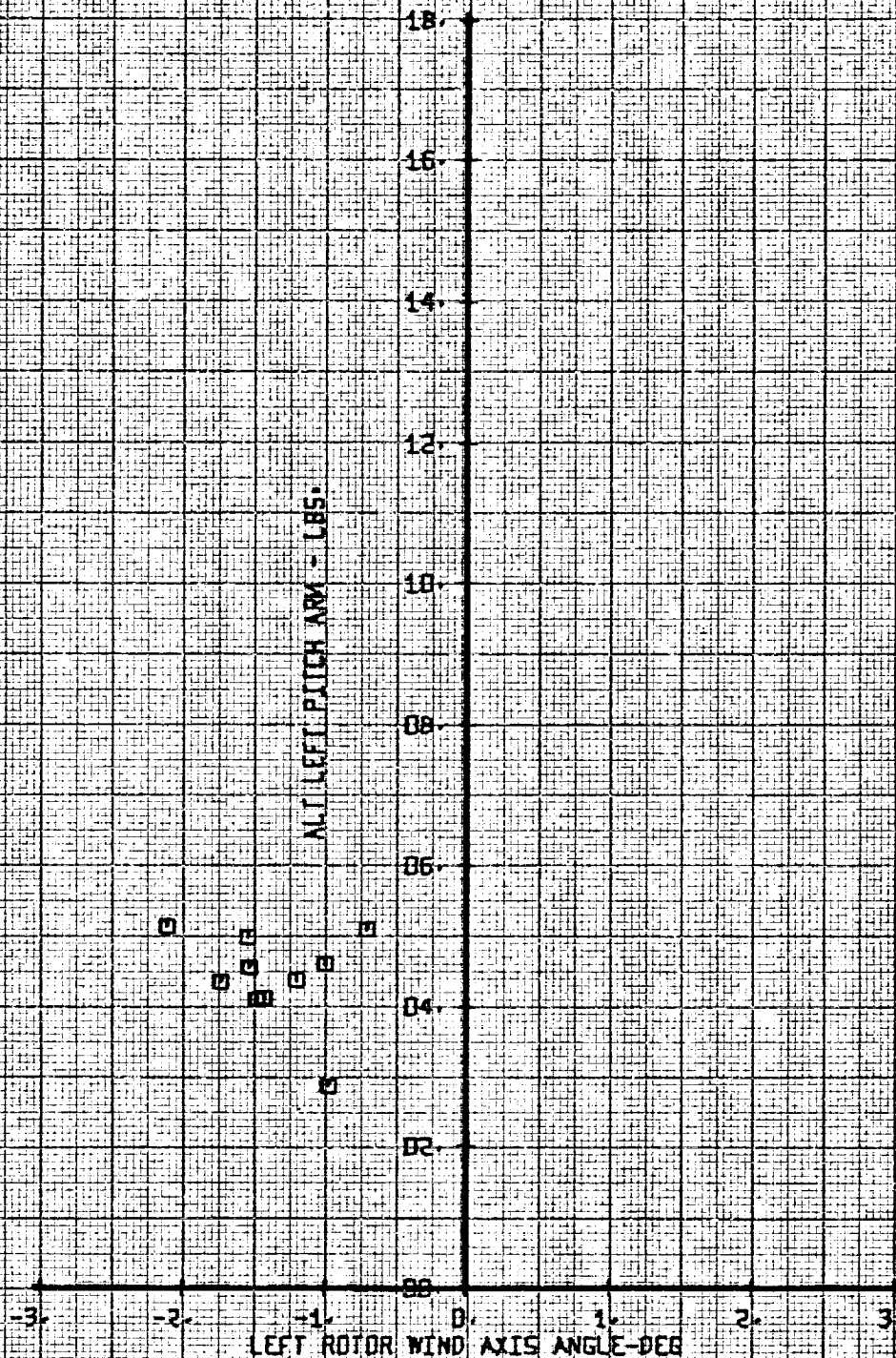
-1

300

VARY

0

Figure 17-021. Alt. Left Pitch Link Load Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



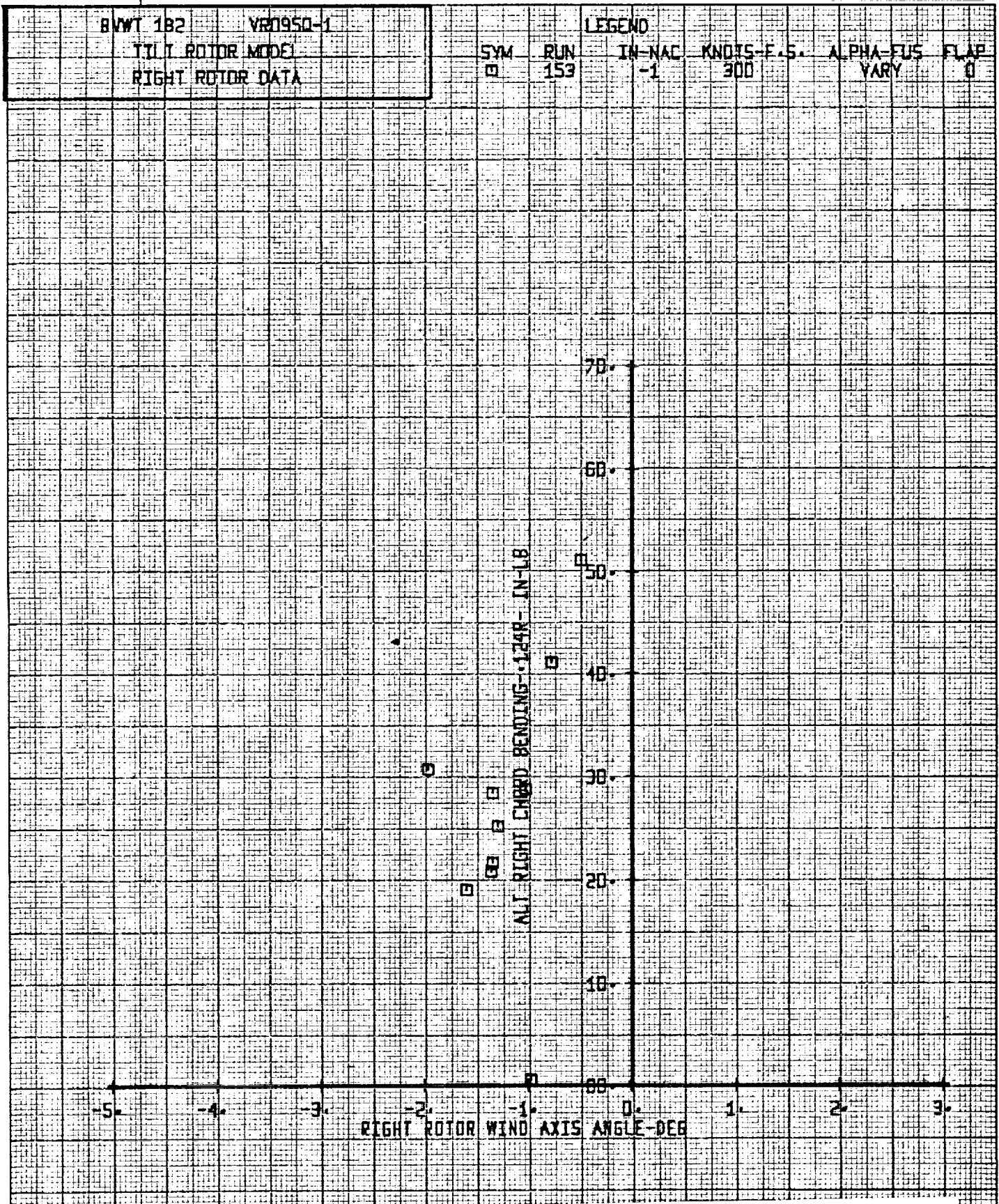


Figure 17-022. Alt. Right Chord Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

BWV 182 YR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM

RUN

LEGEND

IN-HAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

153

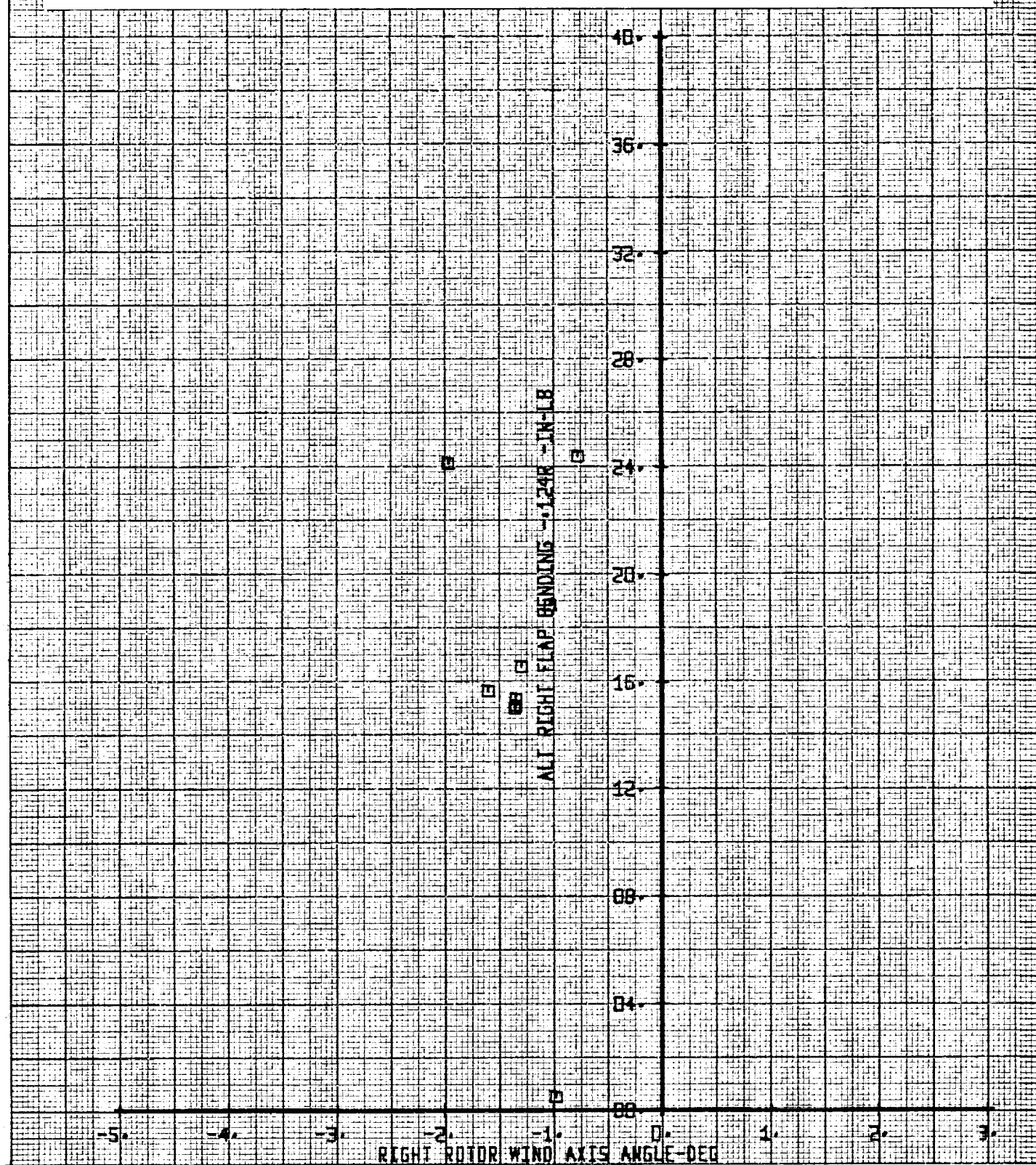
-1

300

VARY

0

Figure 17-023. Alt. Right Flap Bending Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BVWT 182 VR0950-1

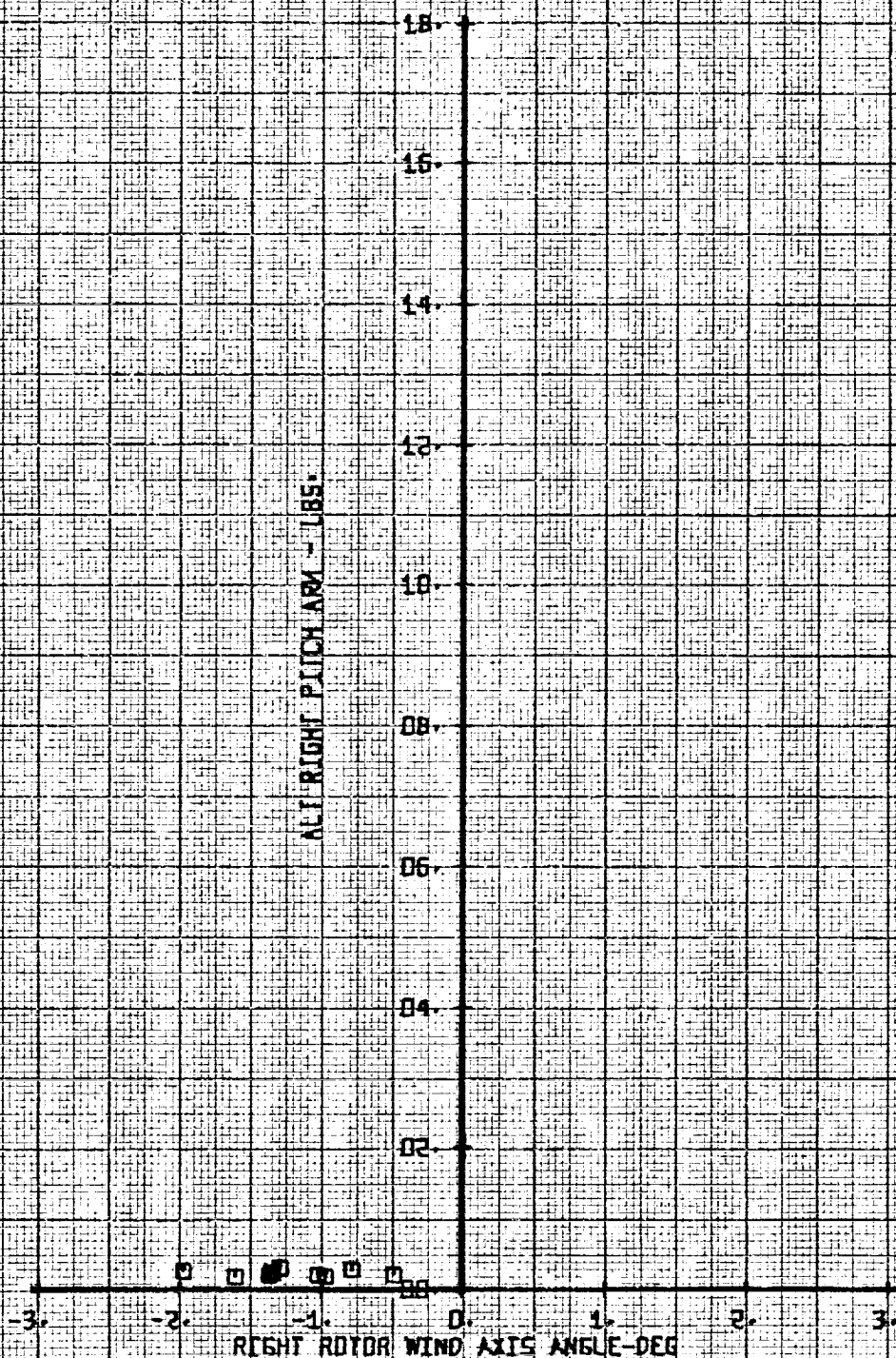
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

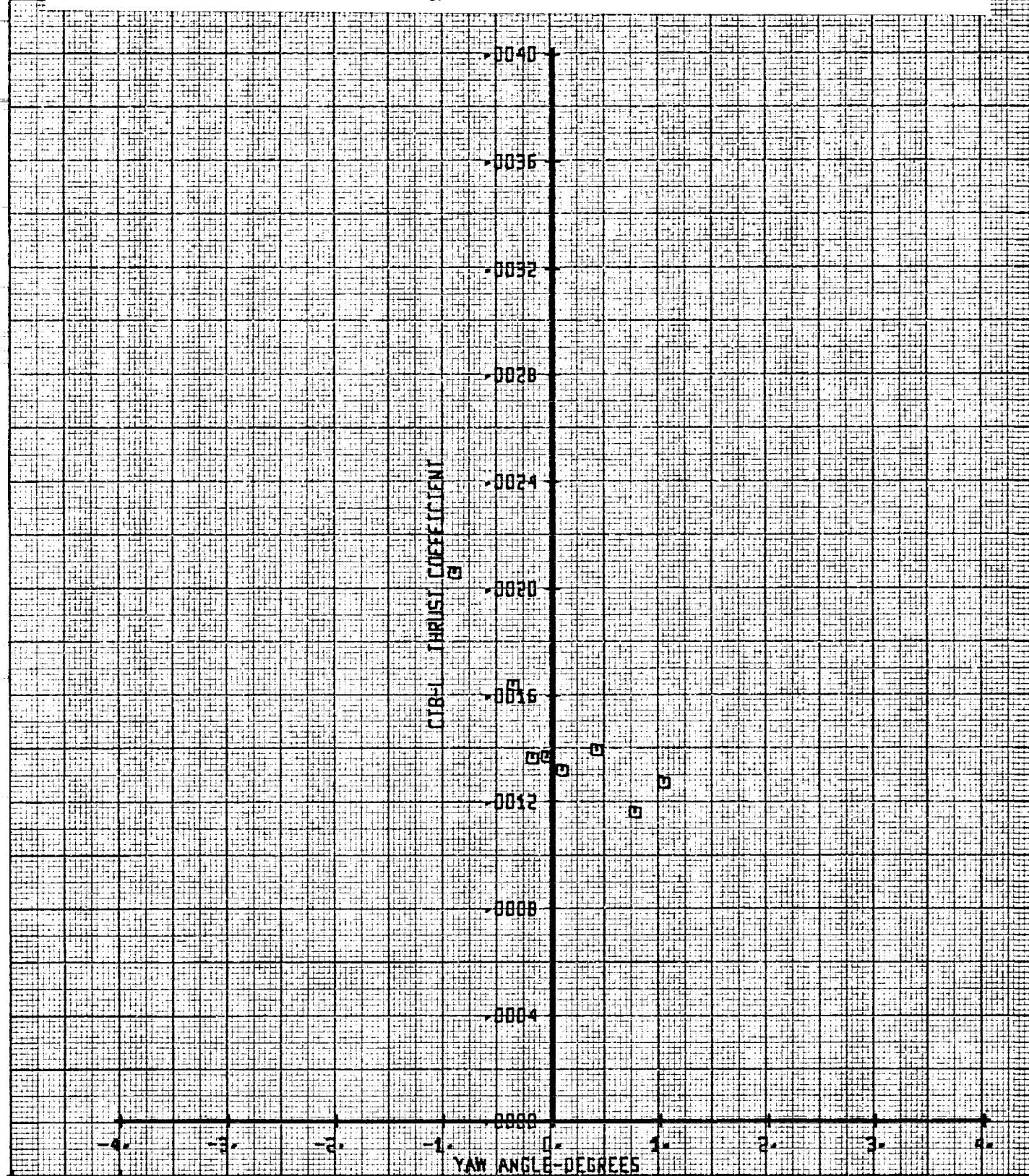
SYM
□RUN
153IN-NAC
-1KNOTS-F.S.
300ALPHA-FUS
VARYFLAP
0

Figure 17-024. Alt. Right Pitch Link Load Versus Rotor Angle of Attack. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BYWT 182	VR095D-1	SYM	RUN	IN-MAC	KNOTS-F.S.	ALPHA-FUS	FLAP
TILT ROTOR MODEL		0	154	-1	300	0	0
LEFT ROTOR DATA							

Figure 17-025. Left Rotor Thrust Coefficient Versus Yaw Angle γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

SYM

RUN

LEGEND

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

154

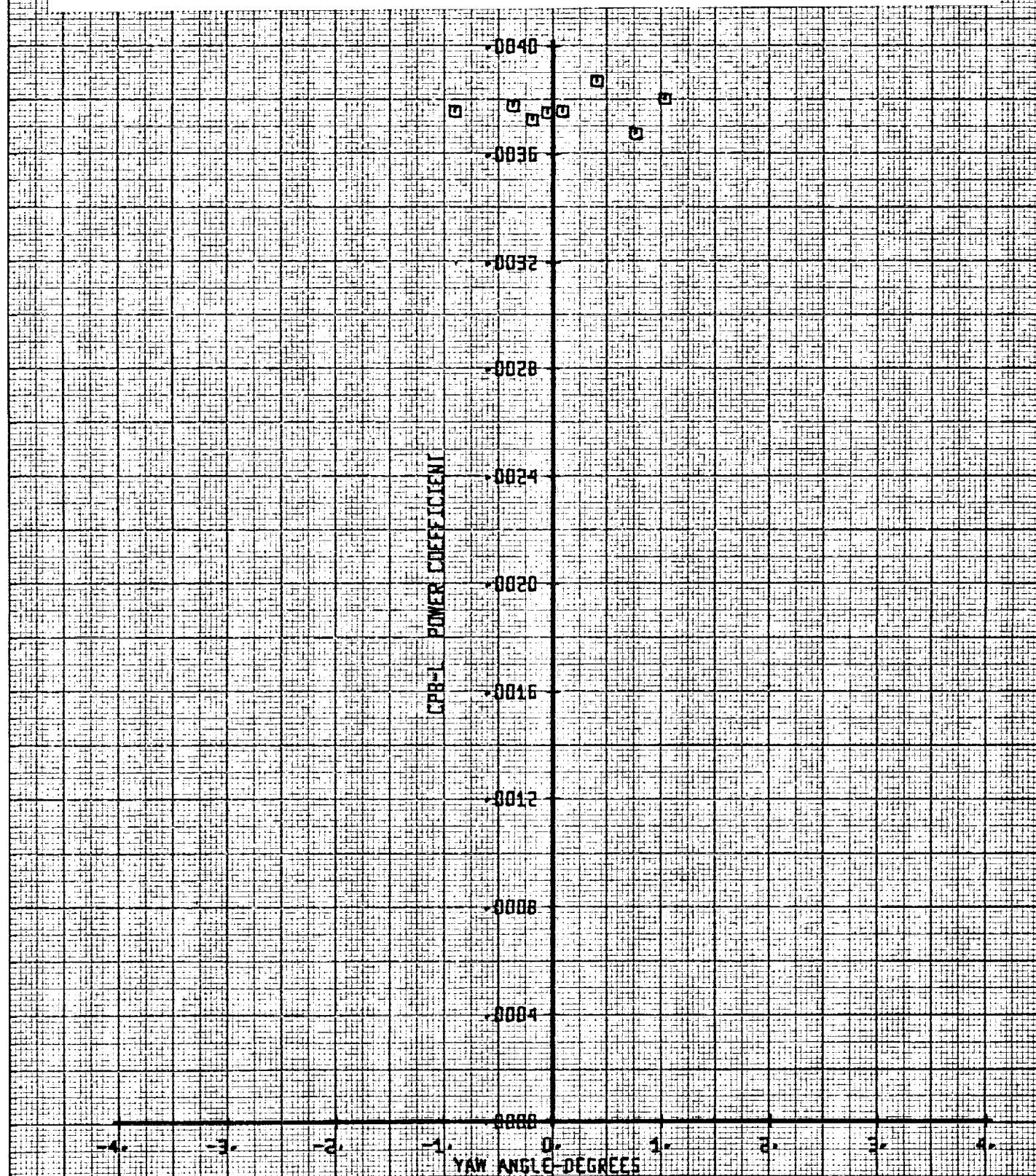
-1

300

0

0

Figure 17-026. Left Rotor Power Coefficient Versus Yaw Angle γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



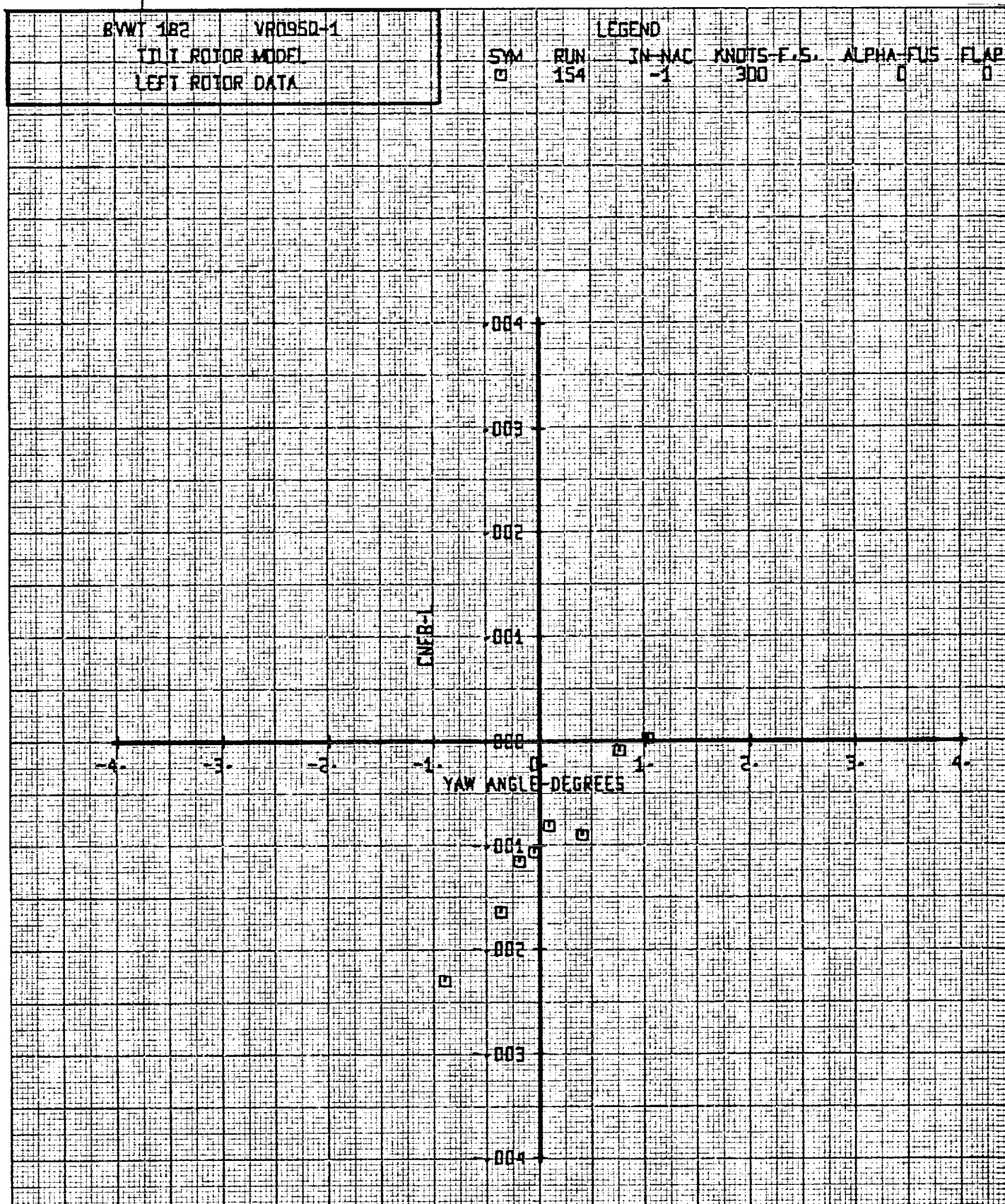


Figure 17-027. Left Rotor Normal Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

BVWT 182 VR095D-1
TILT ROTOR MODEL
LEFT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 154 -1 300 0 0

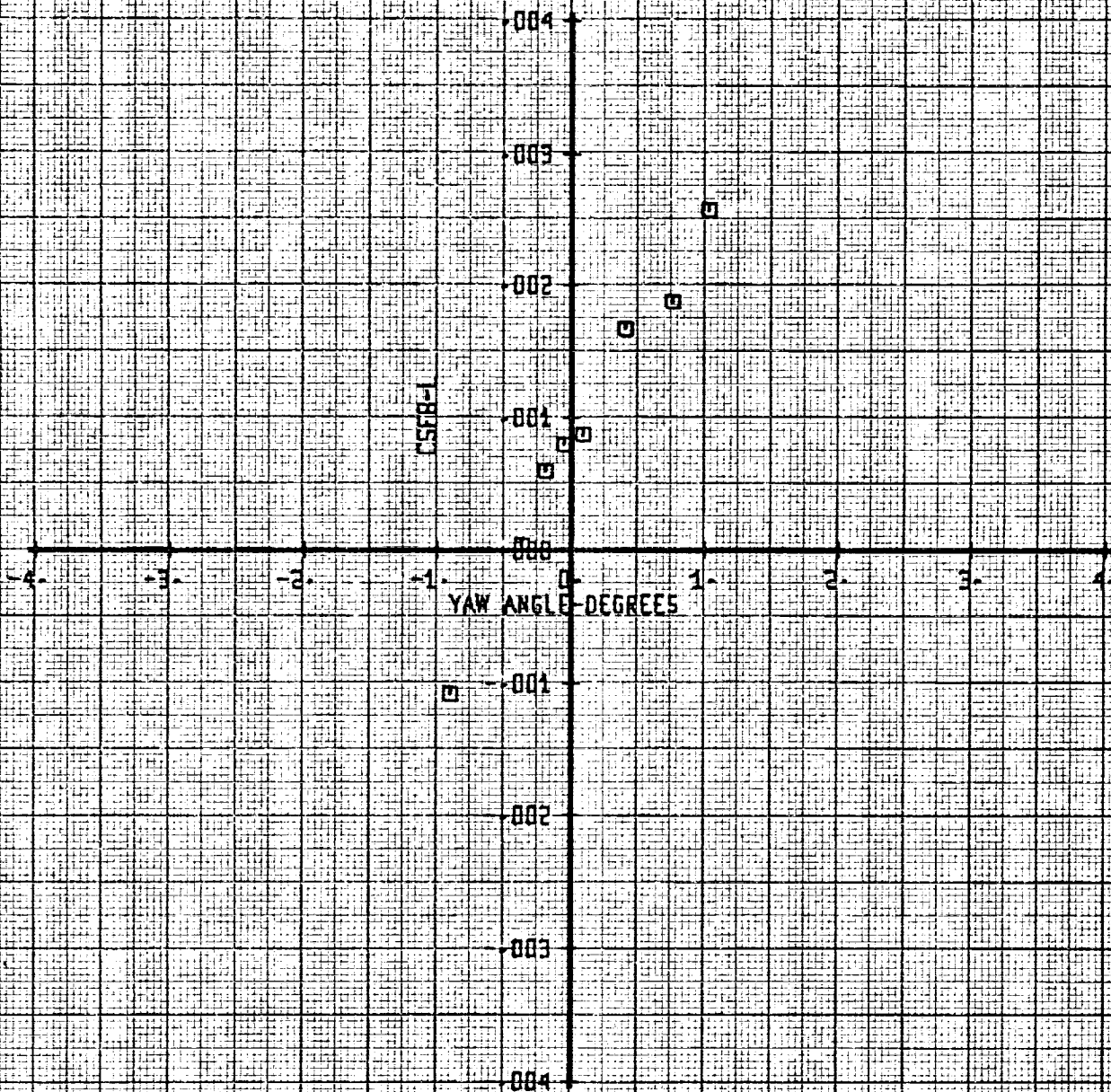


Figure 17-028. Left Rotor Side Force Coefficient Versus Yaw Angle
~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

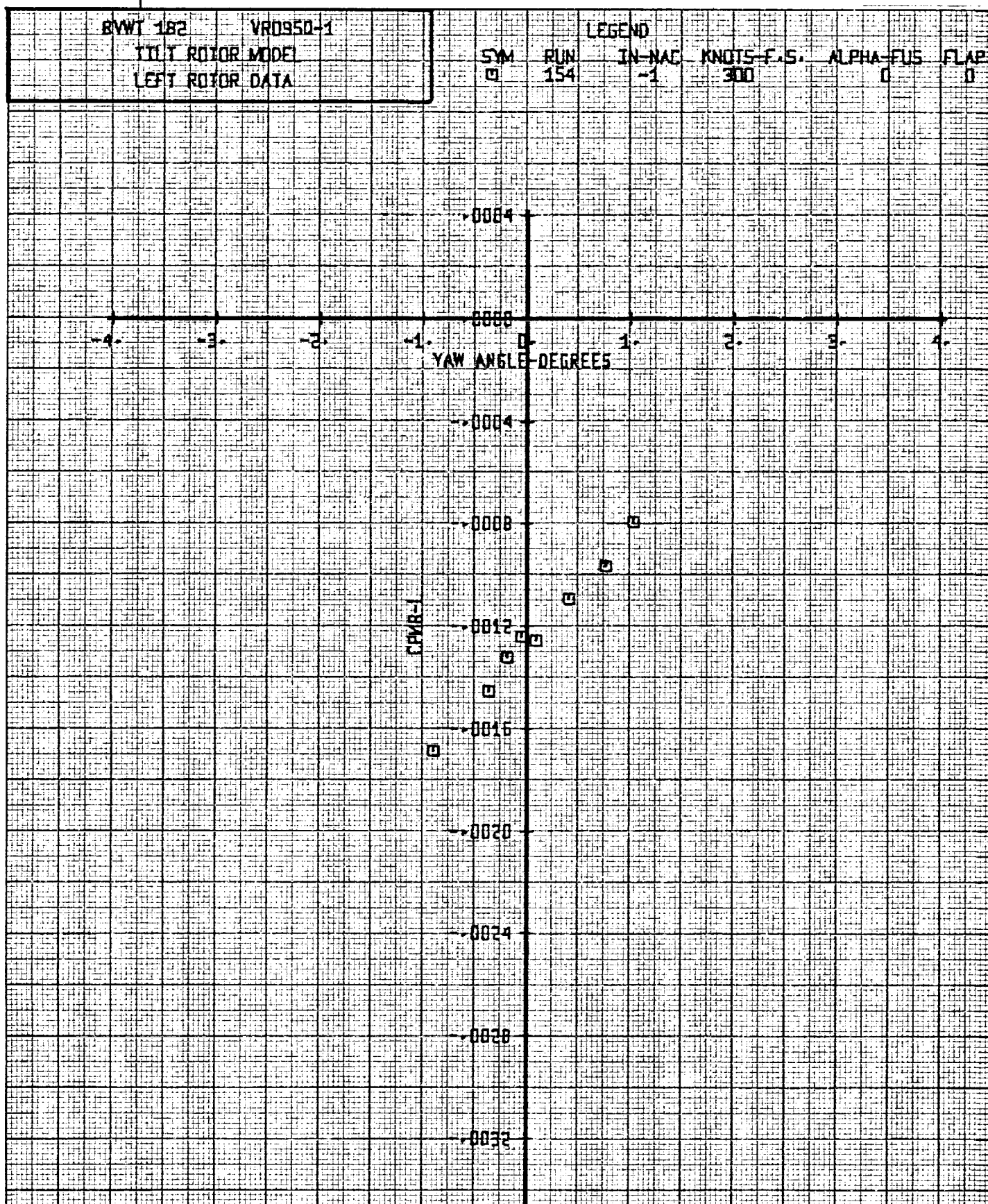


Figure 17-029. Left Rotor Pitching Moment Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

SYM

□

RUN

154

LEGEND

IN-NAC

-1

KNOTS-F.S.

300

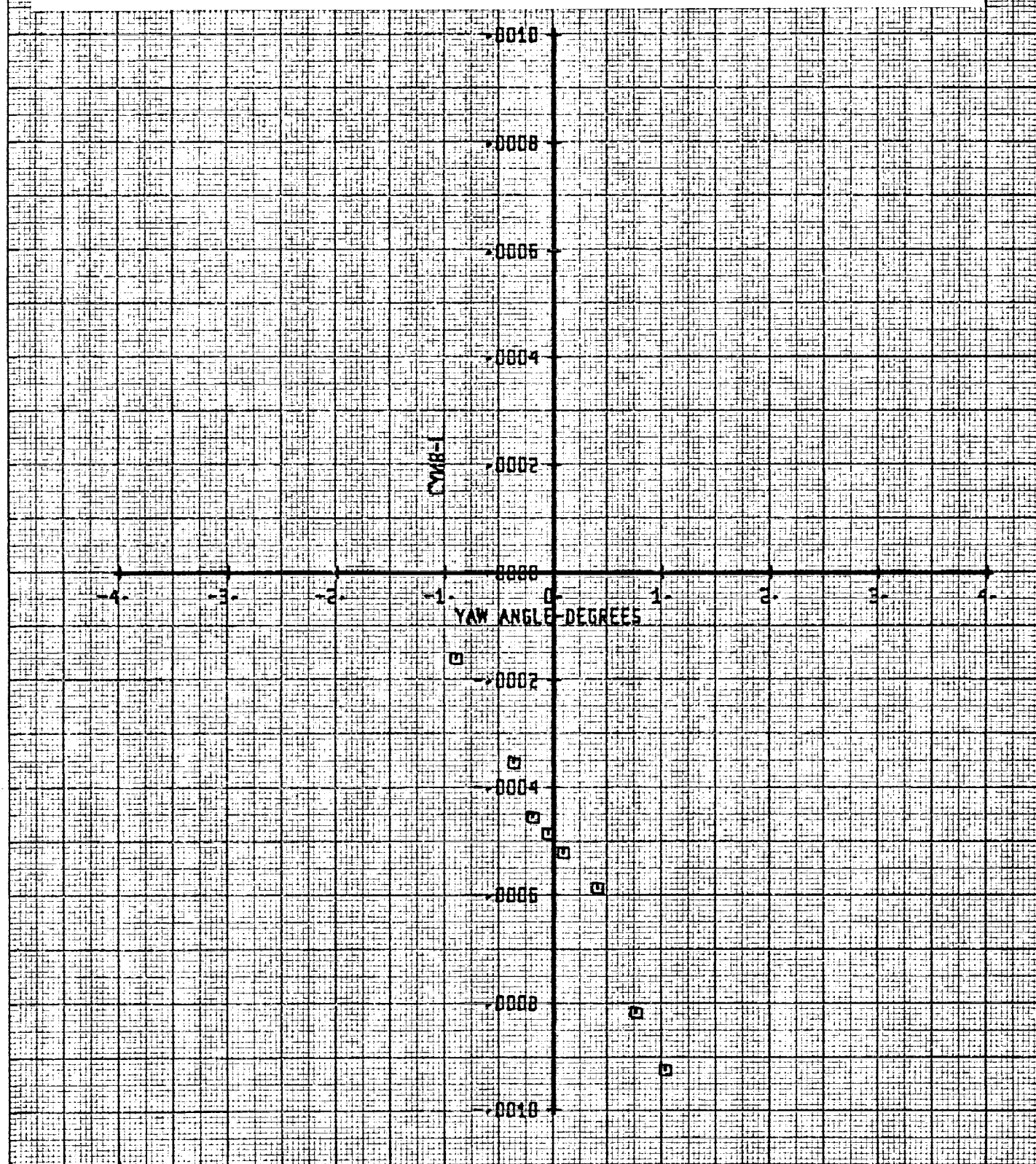
ALPHA-FUS

0

FLAP

0

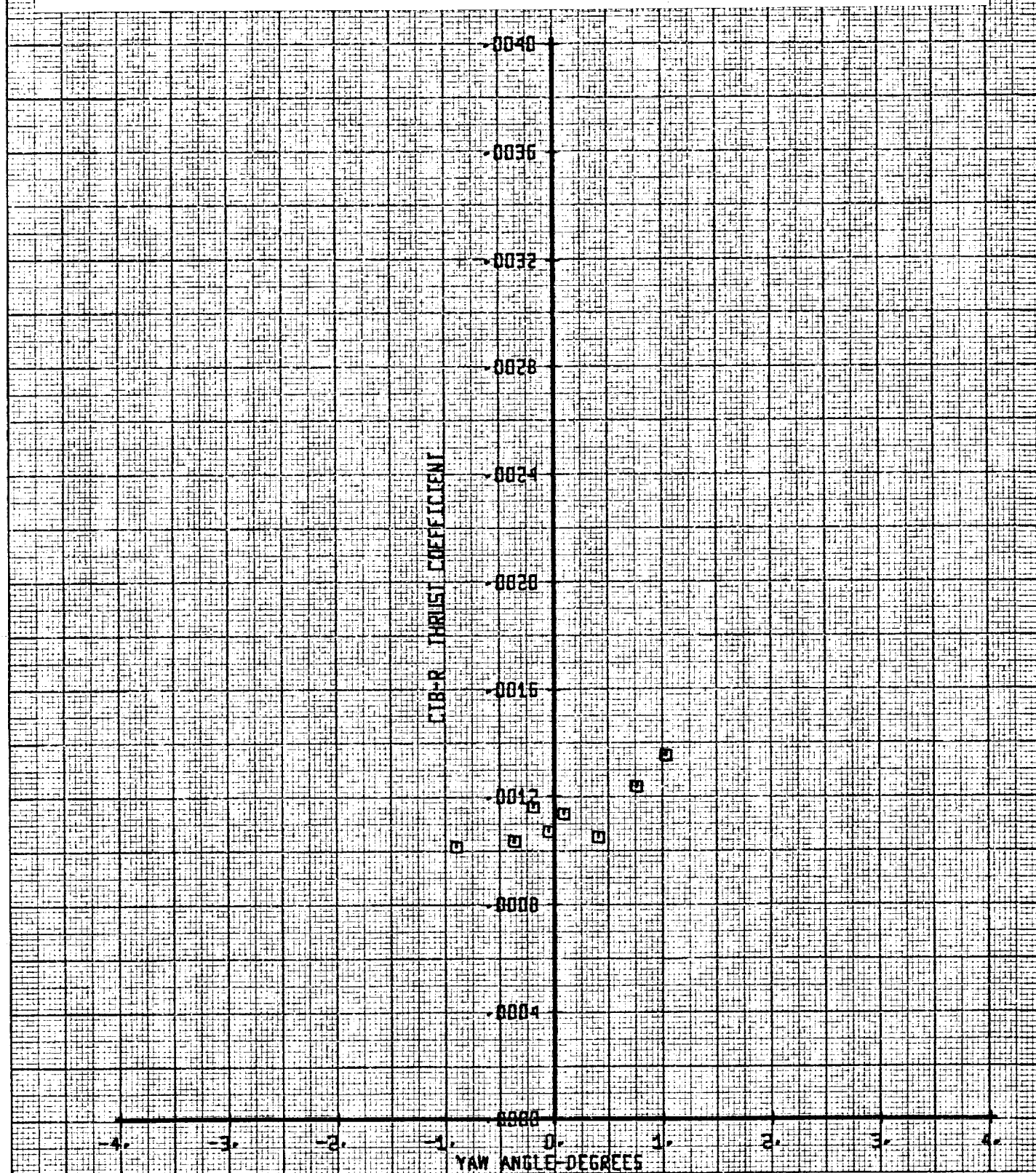
Figure 17-030. Left Rotor Yawing Moment Versus Yaw Angle γ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BYWT 182 VR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 154 -1 300 0 0

Figure 17-031. Right Rotor Thrust Coefficient Versus Yaw Angle
~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



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TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNJTS-F-5.

ALPHA-FLU

FLAP

154

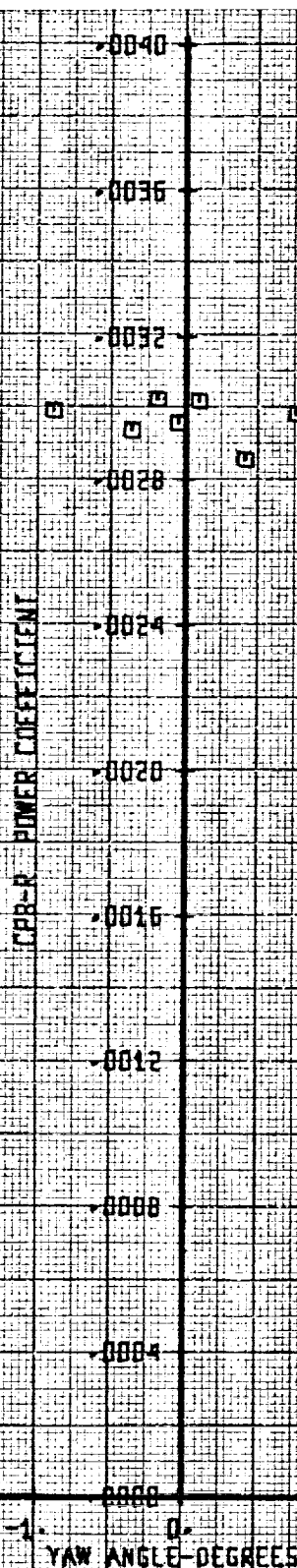
154

300

1

20

Figure 17-032. Right Rotor Power Coefficient Versus Yaw Angle α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



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BVNT	182

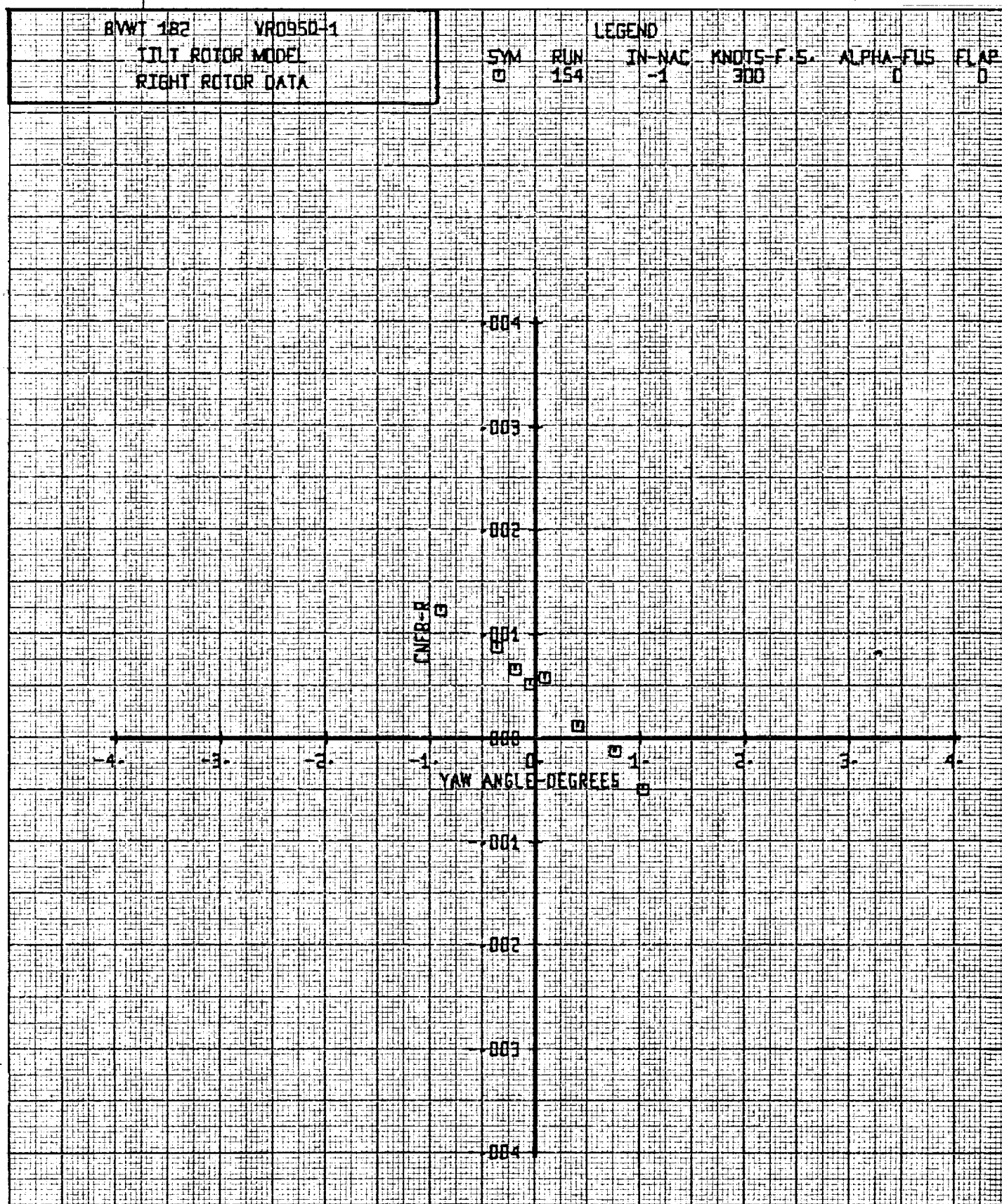


Figure 17-033. Right Rotor Normal Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

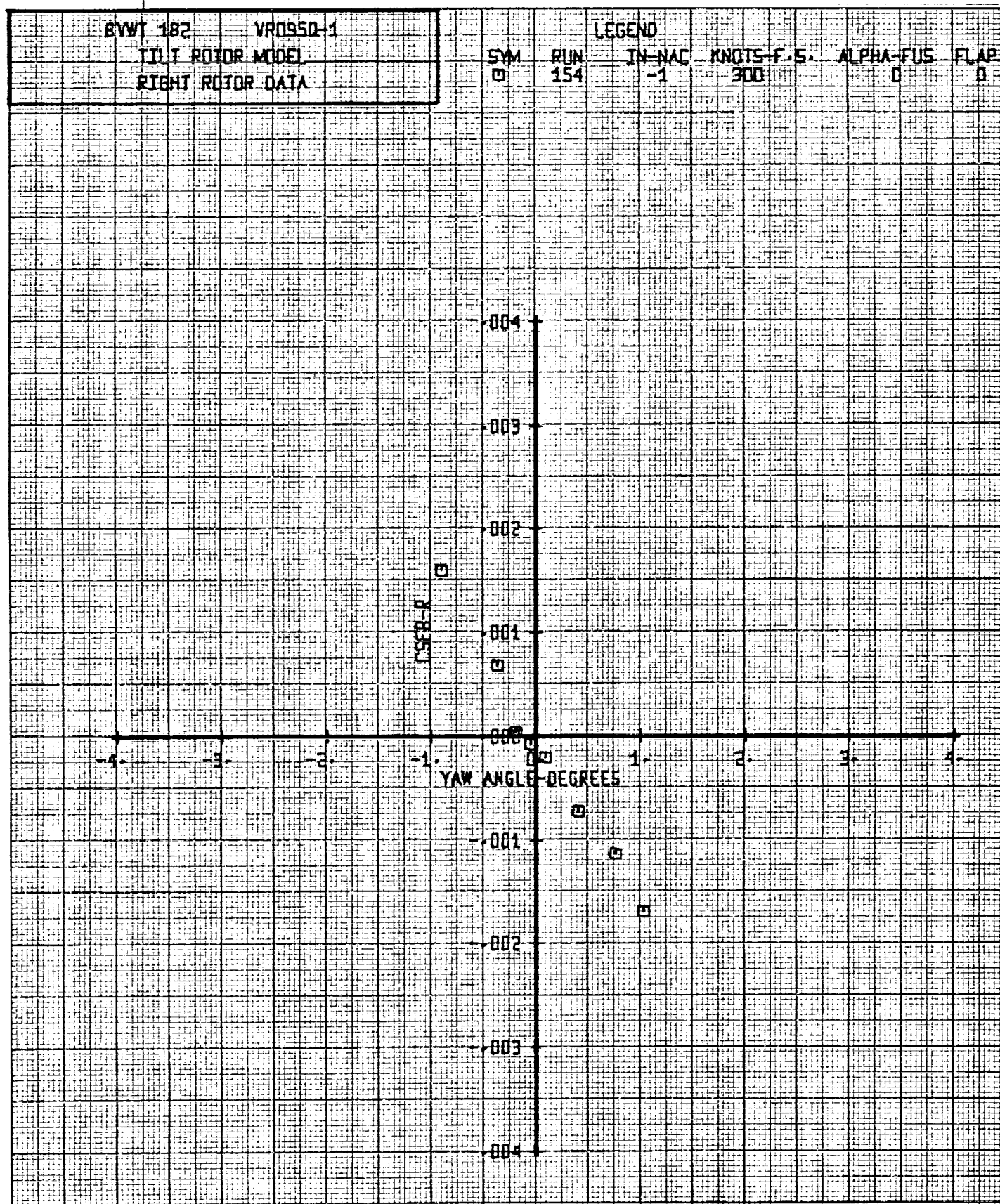


Figure 17-034. Right Rotor Side Force Coefficient Versus Yaw Angle ~ Degrees. $I_N = -1P$ Full Scale Airspeed 300 Knots.

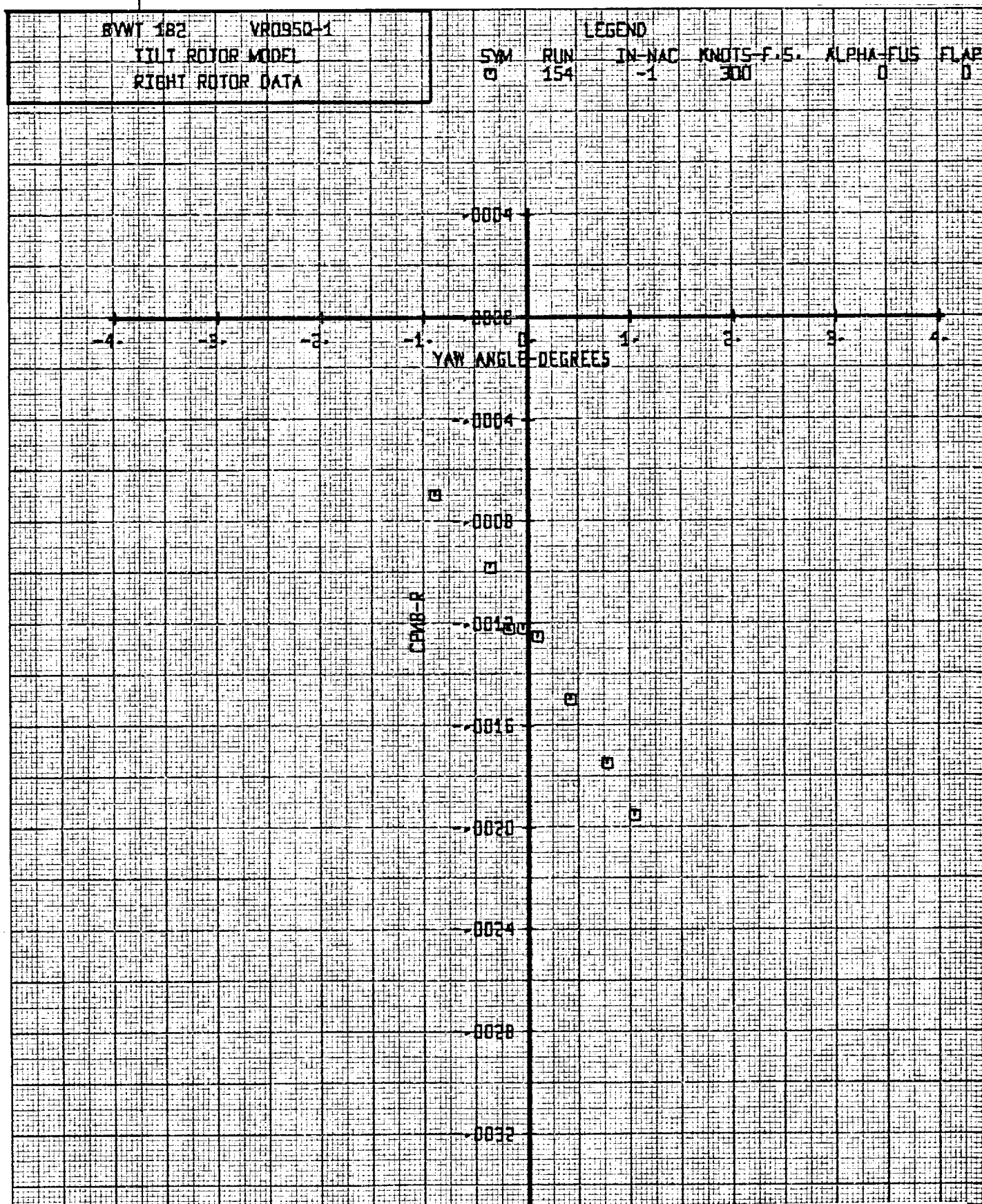


Figure 17-035. Right Rotor Pitching Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

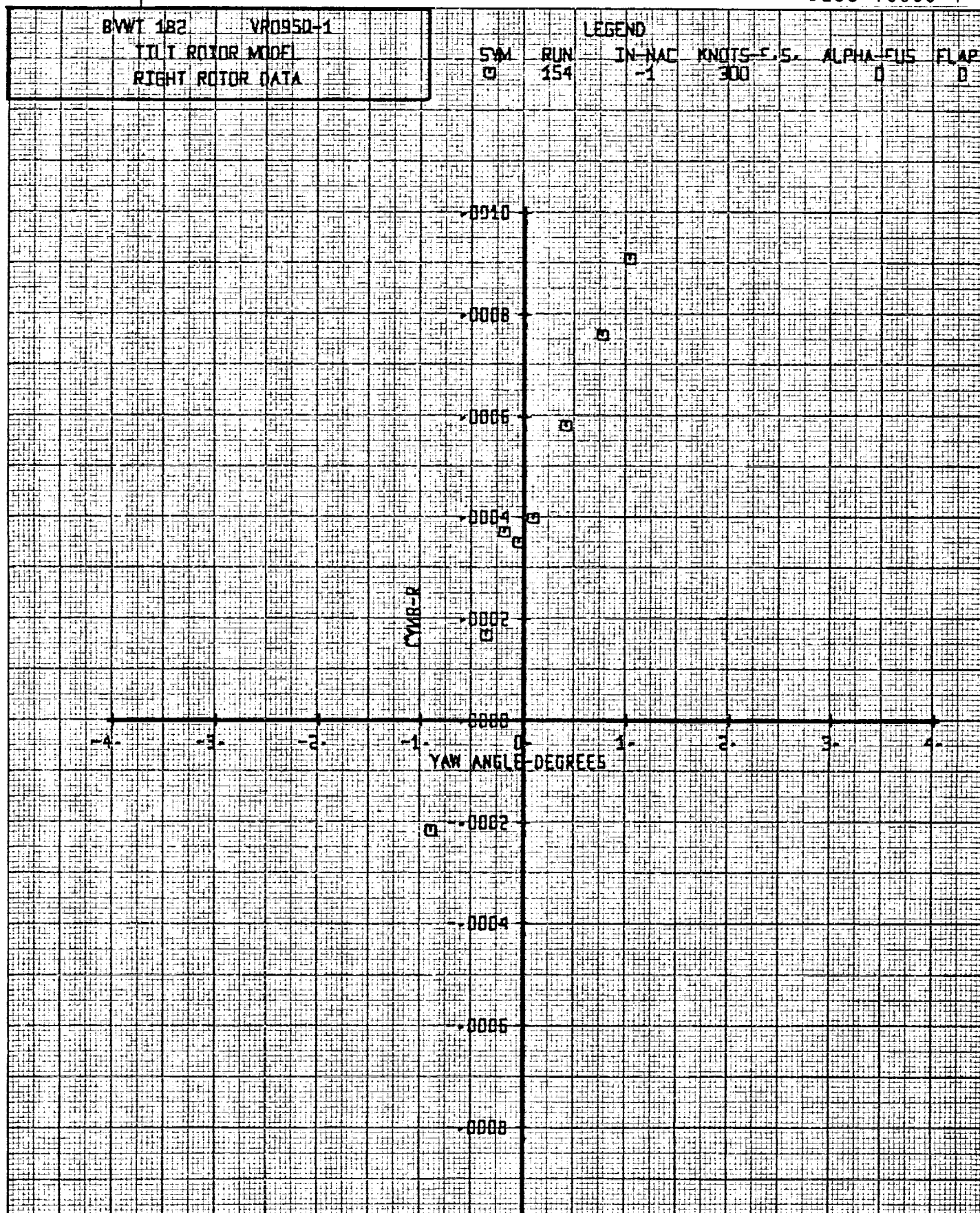


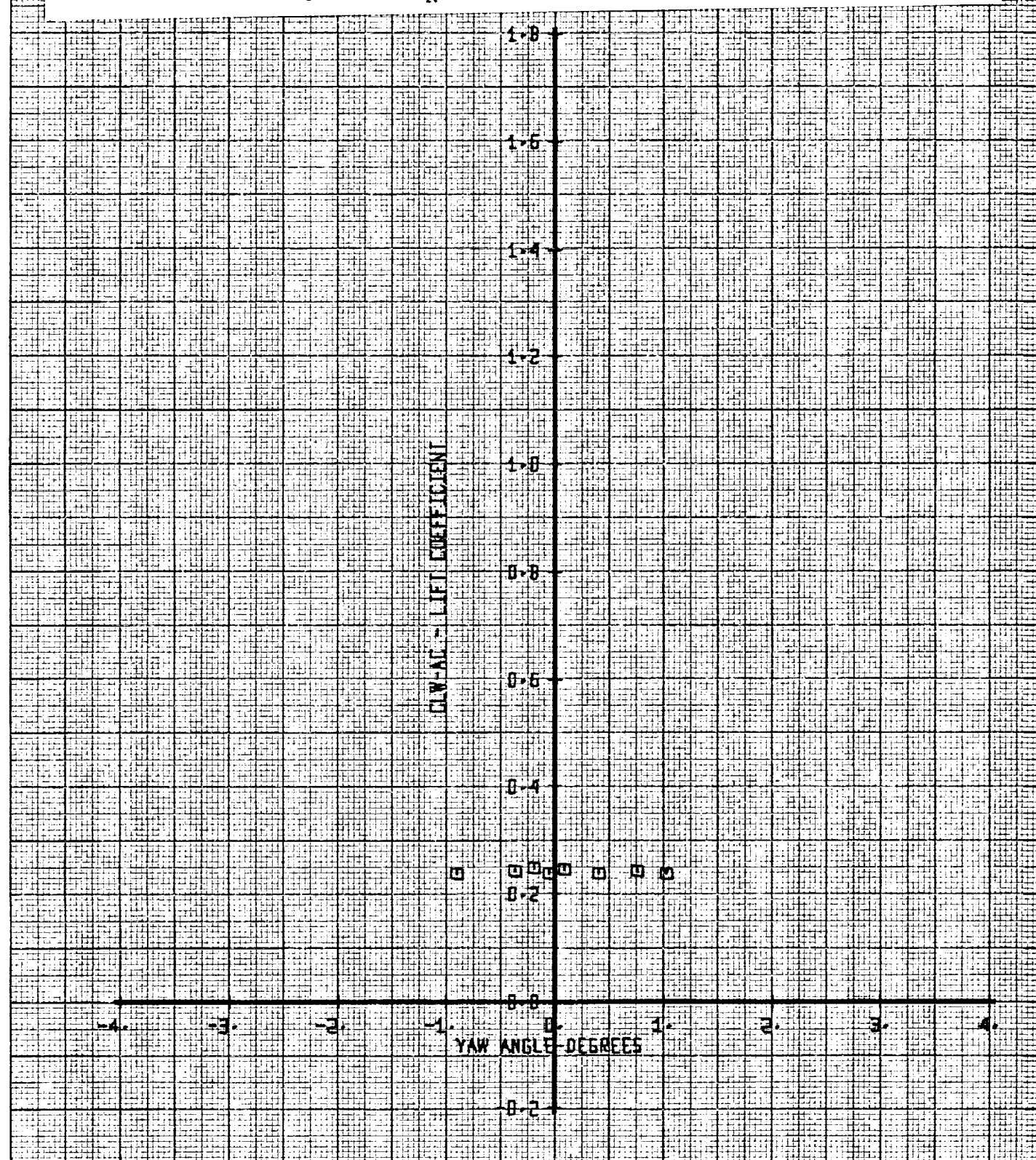
Figure 17-036. Right Rotor Yawing Moment Versus Yaw Angle ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

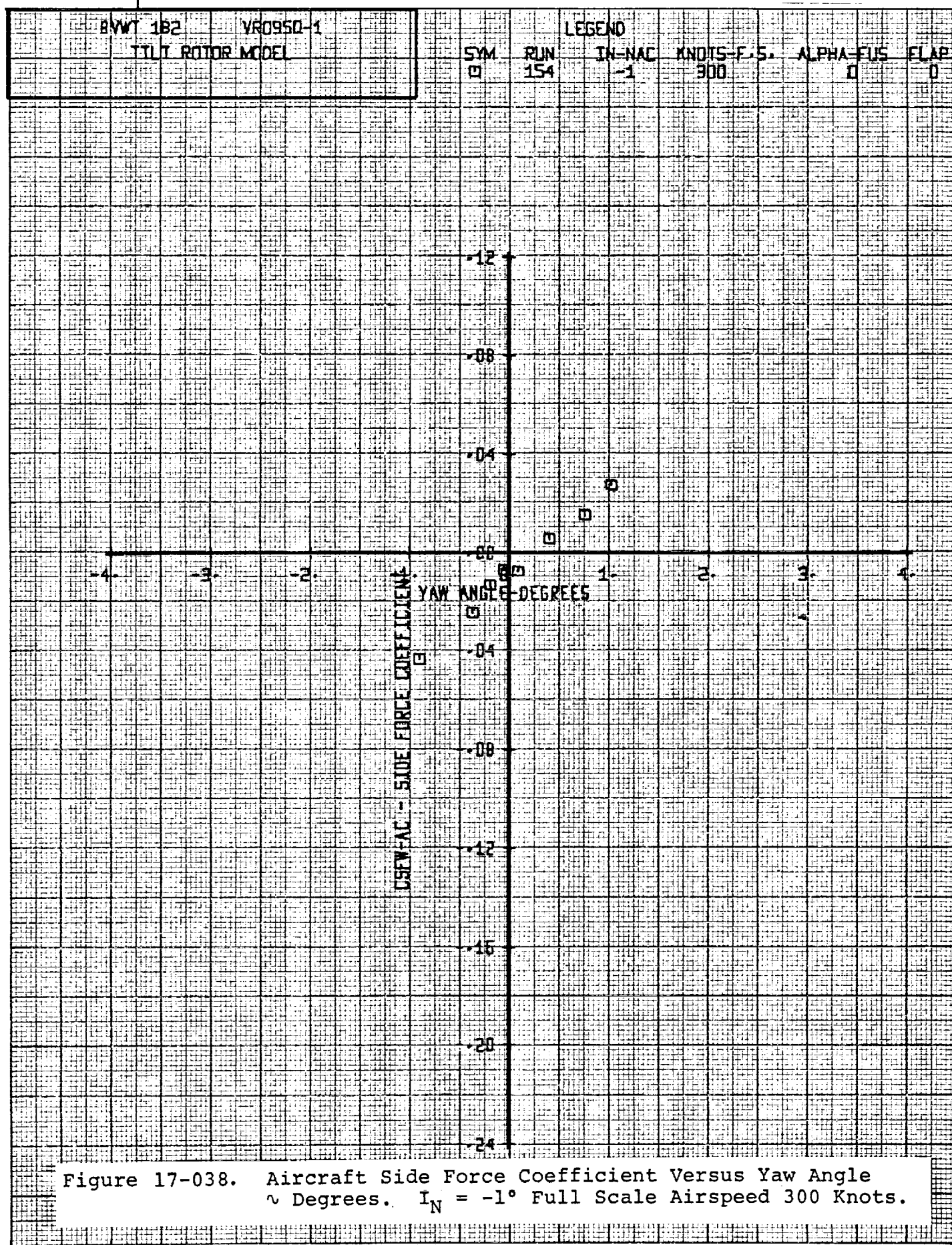
BVWT 182 VR0950-1
TILT ROTOR MODEL

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	154	-1	300	0	0

Figure 17-037. Aircraft Lift Coefficient Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.





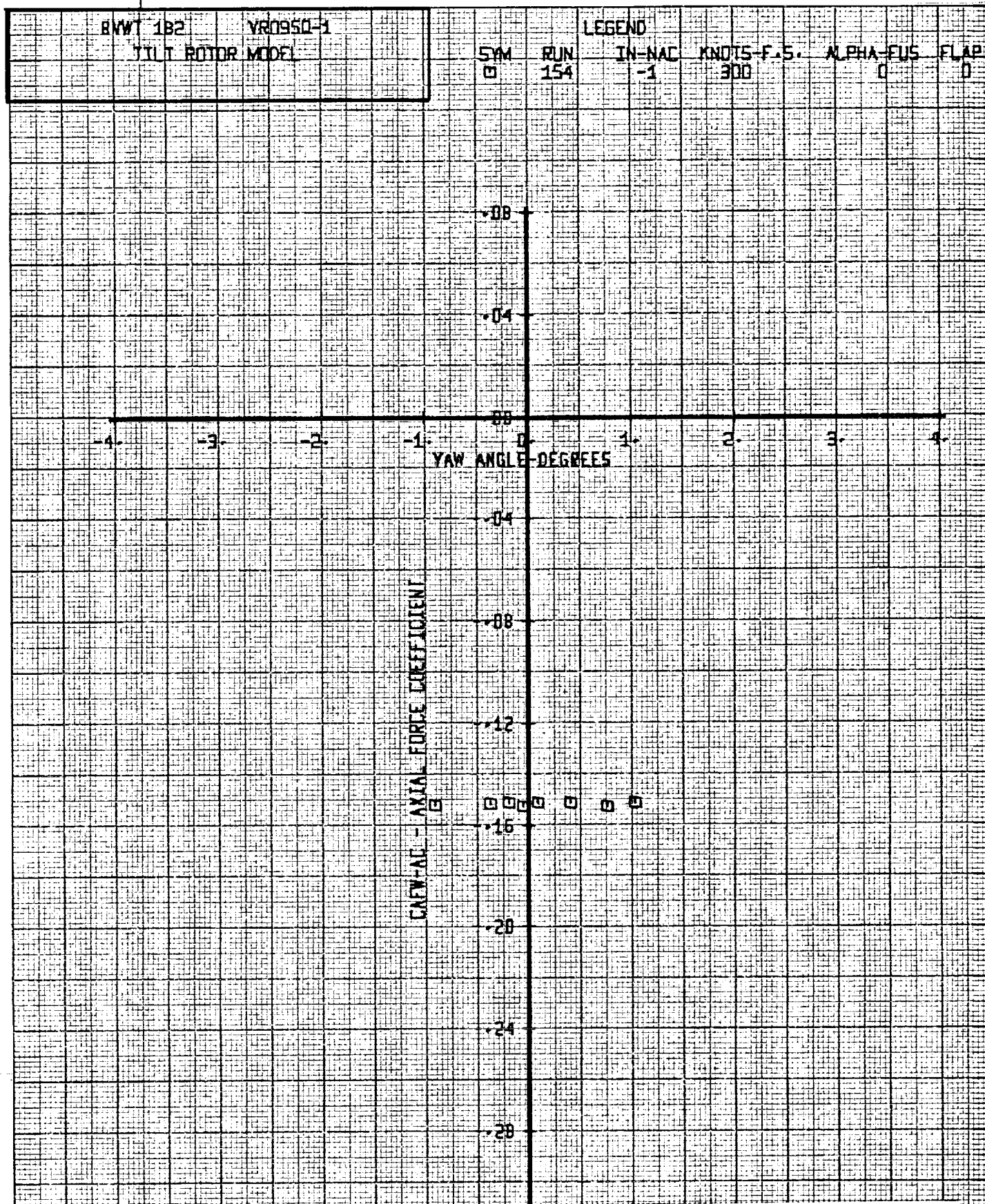


Figure 17-039. Aircraft Axial Force Coefficient Versus Yaw Angle
 ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

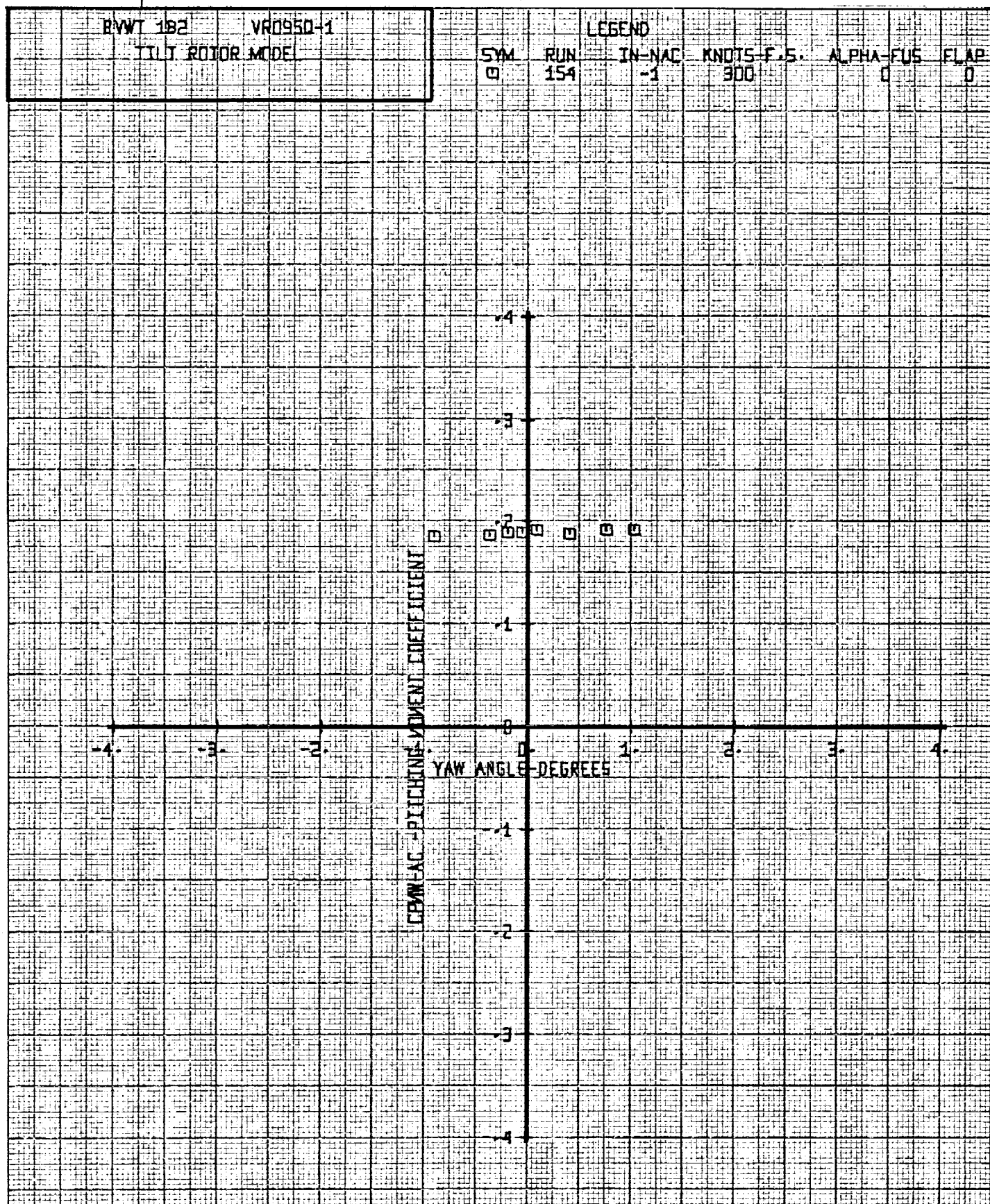


Figure 17-040. Aircraft Pitching Moment Versus Yaw Angle Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

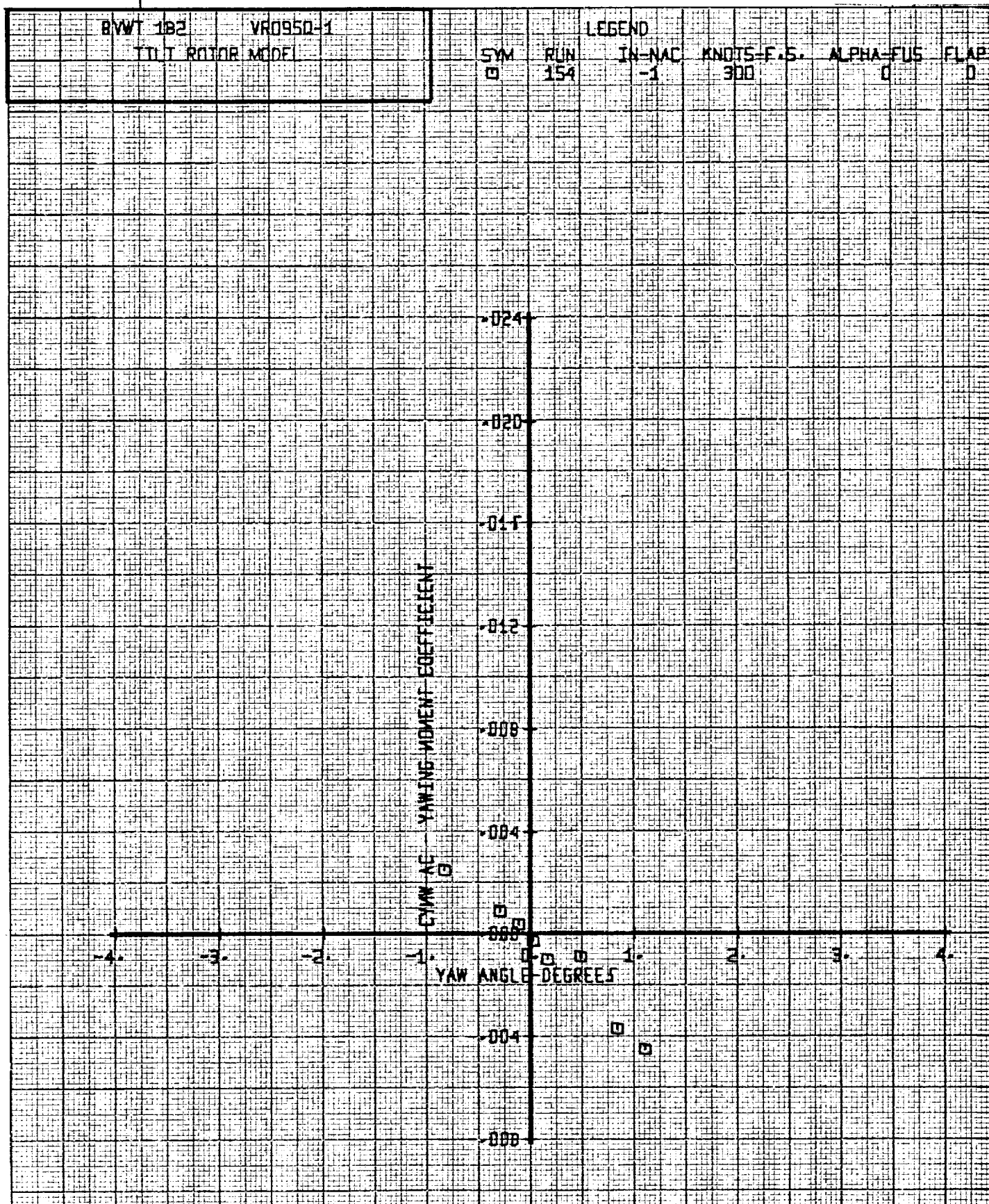


Figure 17-041. Aircraft Yawing Moment Versus Yaw Angle ~ Degrees.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

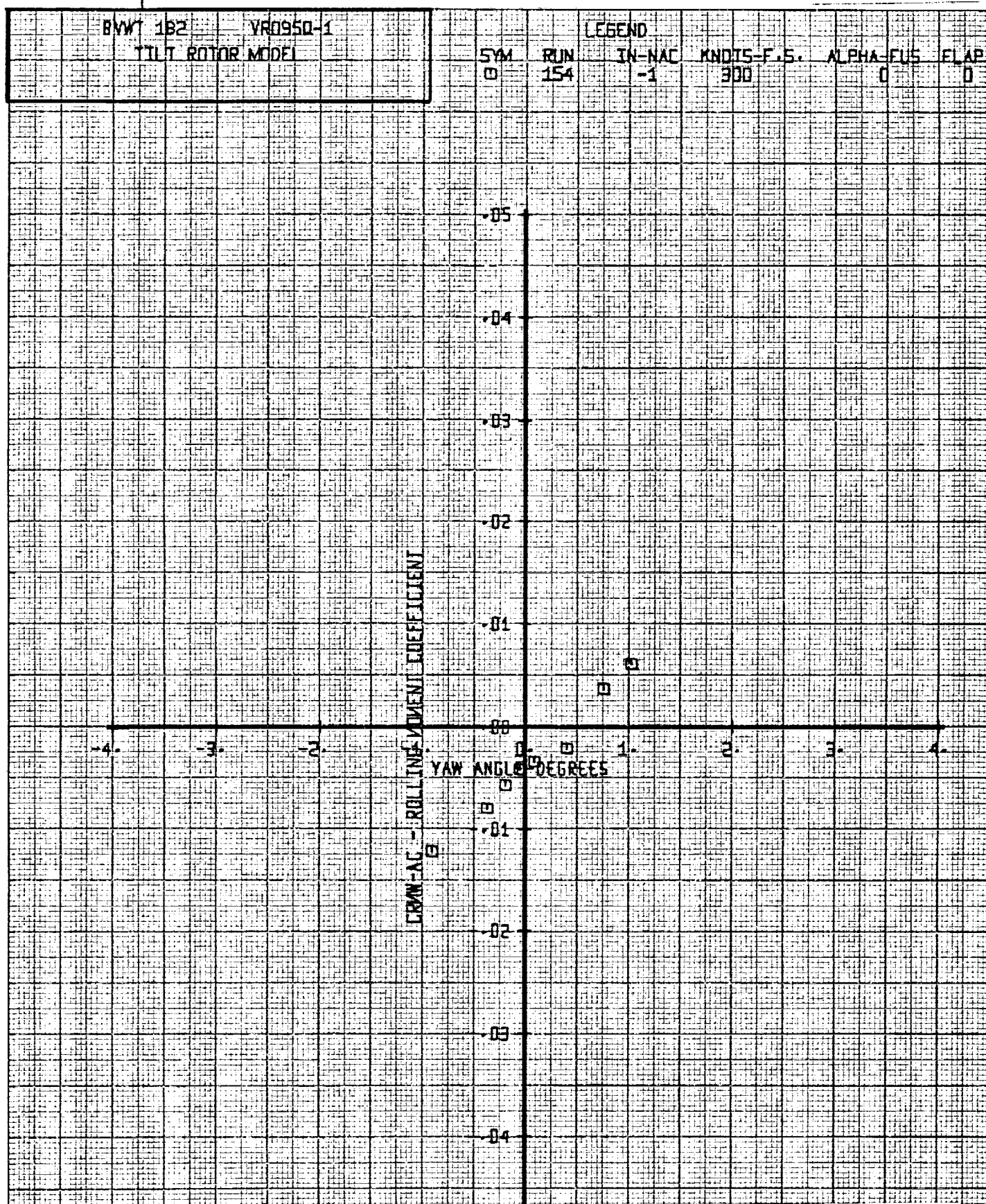


Figure 17-042. Aircraft Rolling Moment Versus Yaw Angle ~ Degrees.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

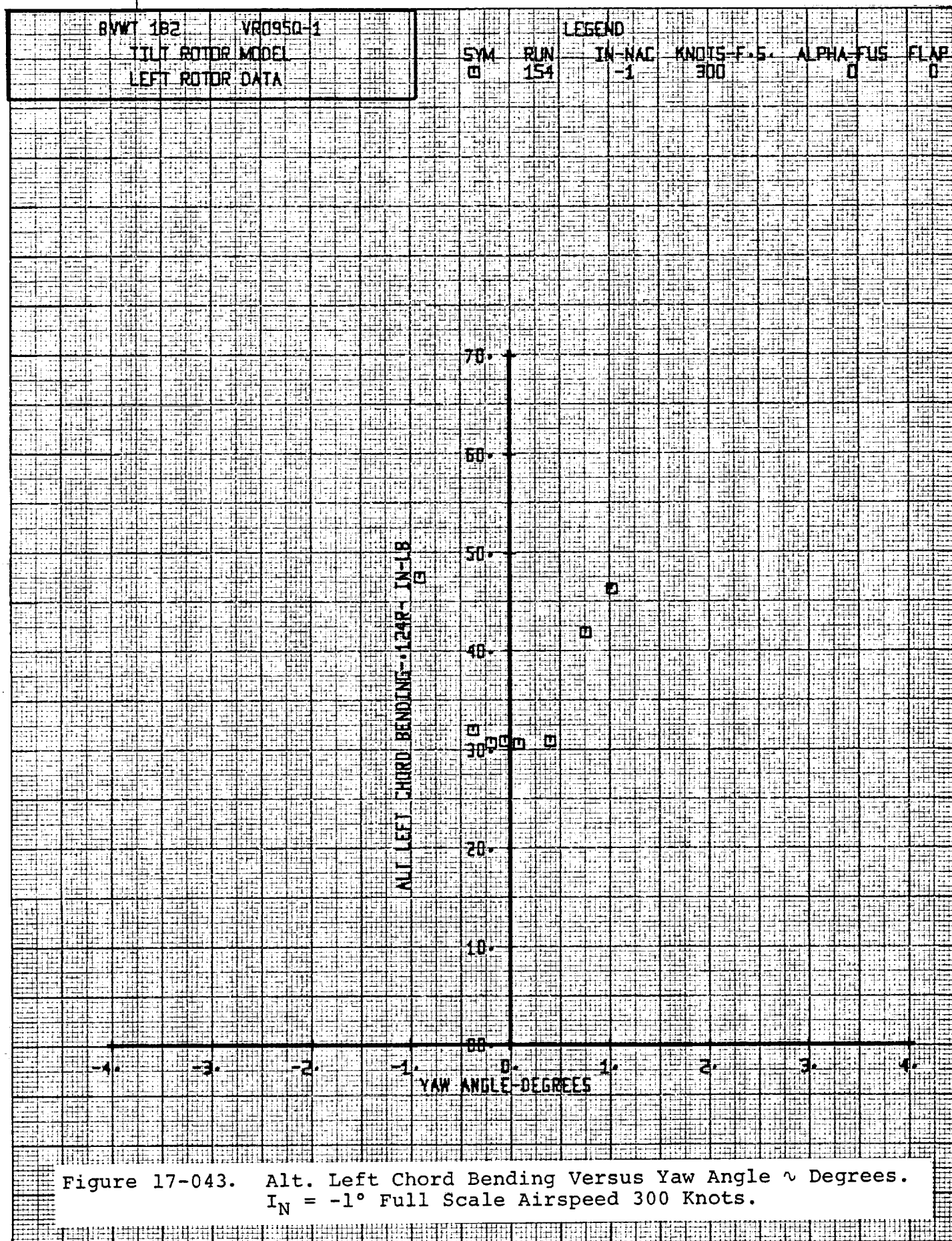


Figure 17-043. Alt. Left Chord Bending Versus Yaw Angle ~ Degrees.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

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T11 ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RLIN

IN-NAC

KNOTS-F.5.

ALPHA-ELIS

ELITE

2

154

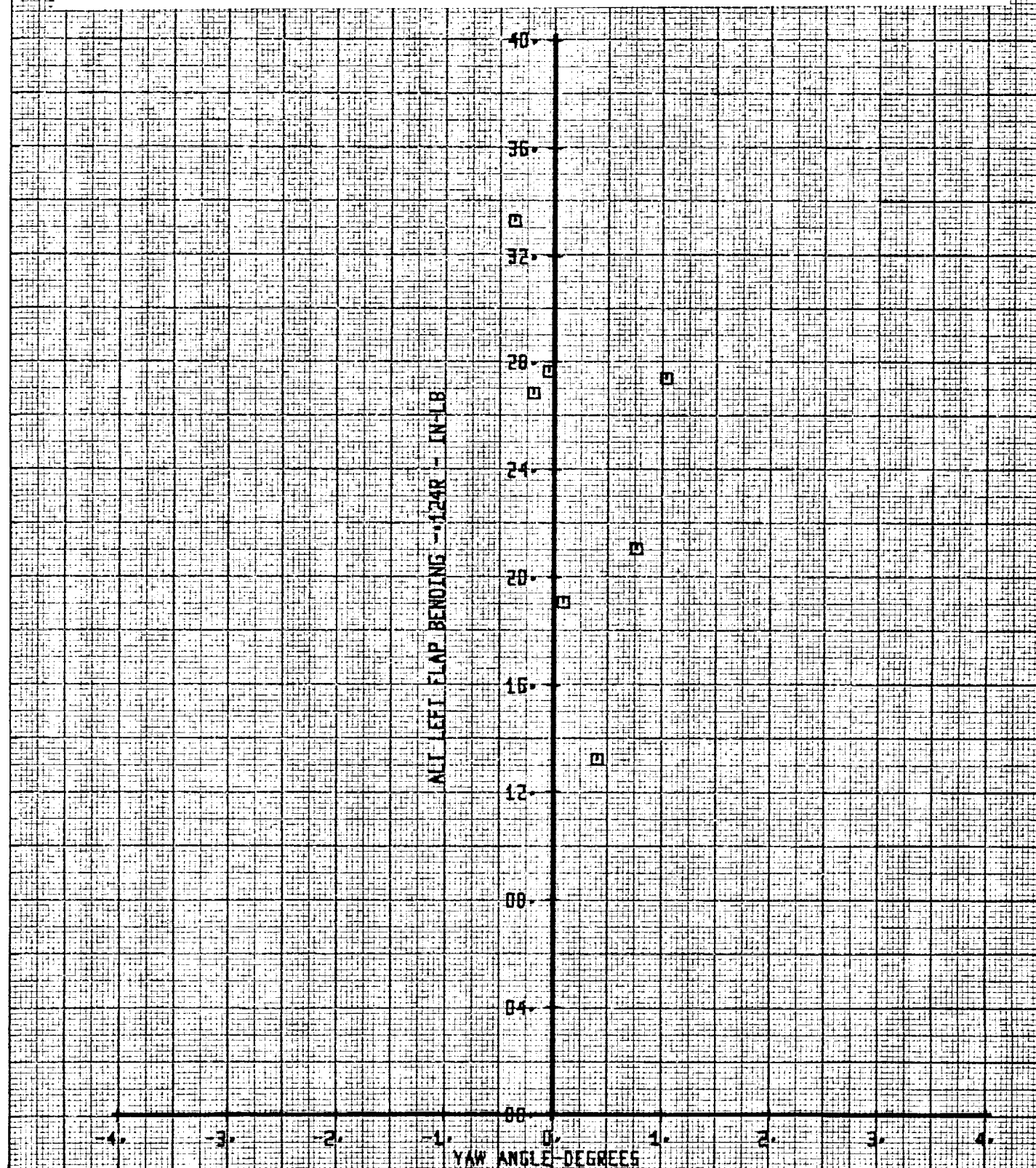
11

300

i

1

Figure 17-044. Alt. Left Flap Bending Versus Yaw Angle α Degrees.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BVWT 182 VR0950-1

TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

0

154

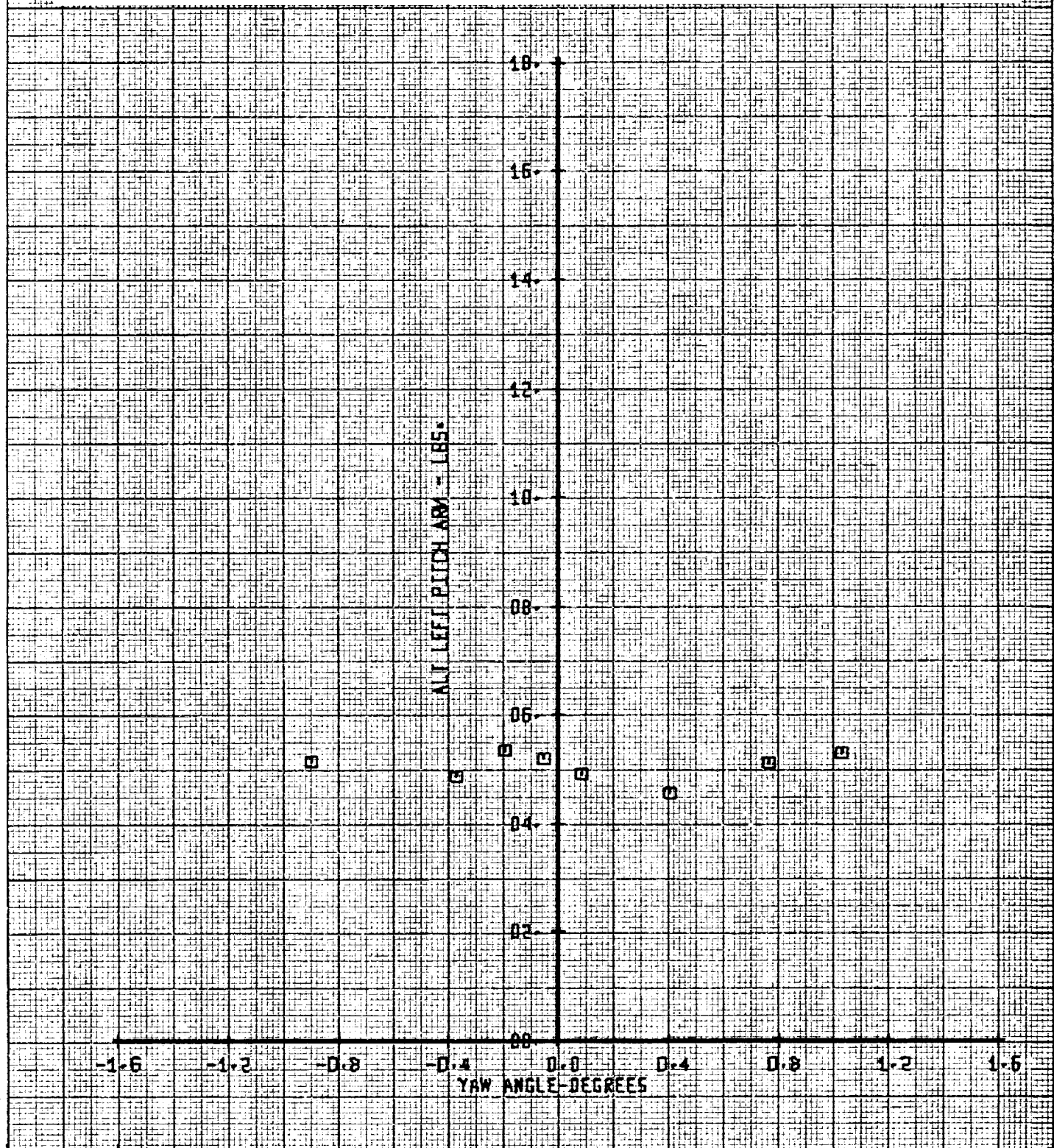
-1

300

0

0

Figure 17-045. Alt. Left Pitch Link Load Versus Yaw Angle ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



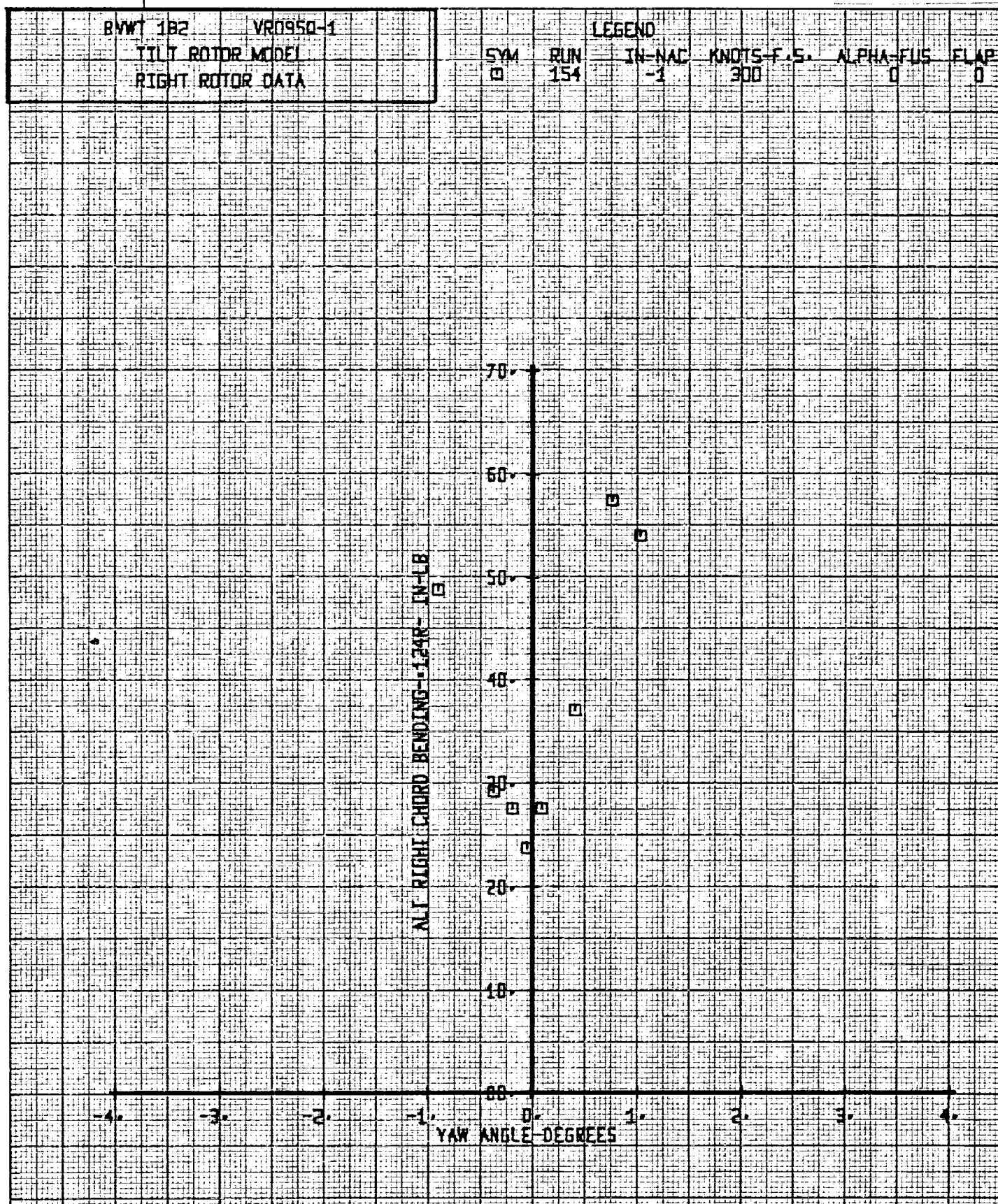
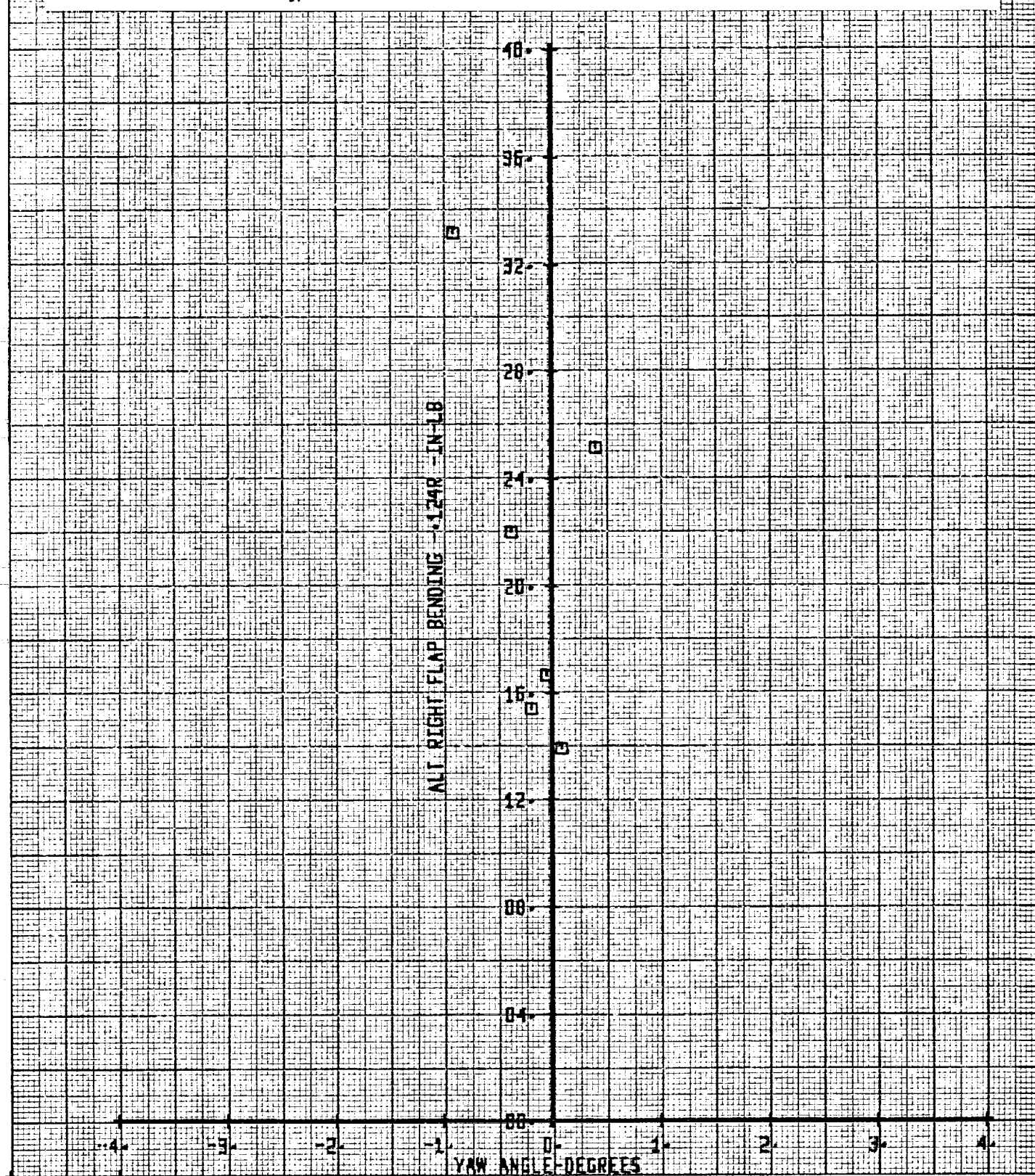


Figure 17-046. Alt. Right Chord Bending Versus Yaw Angle ~ Degrees.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

BWWT 182 YR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 154 -1 300 0 0

Figure 17-047. Alt. Right Flap Bending Versus Yaw Angle ~ Degrees.
 $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BVWT 182 VR0950-1

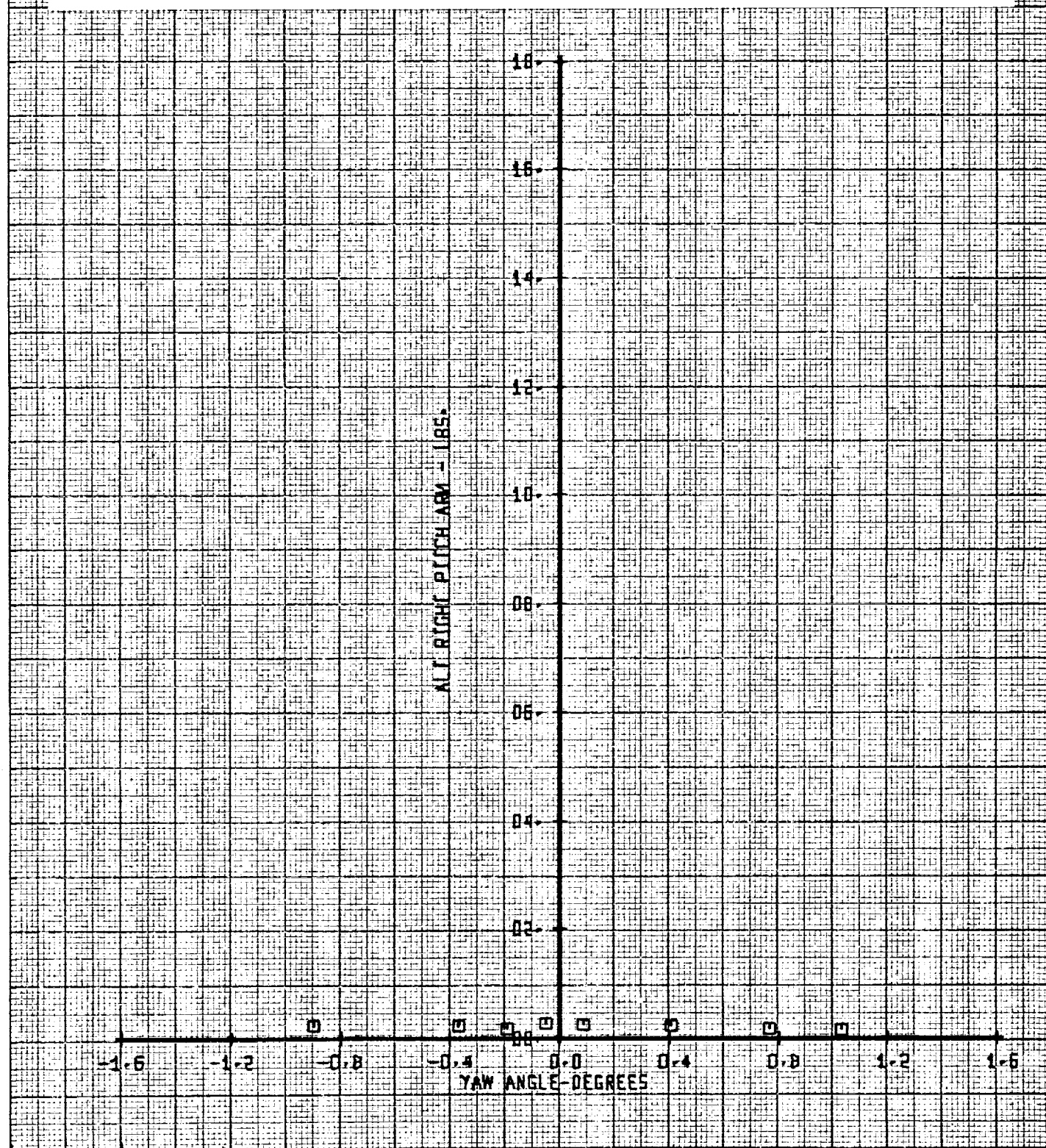
TIT I ROTOR MODE

RIGHT ROTOR DATA

LEGEND

SYM
0RUN
154IN-MAC
-1KNOTS-F.S.
300ALPHA-FUS
0FLAP
0

Figure 17-048. Alt. Right Pitch Link Load Versus Yaw Angle ~
Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



466

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BVWT 182

BVWT 182	VR095Q-1
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LILI ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

544

PLIN

IN-NAC

KNOTS-E. 5.

ALPHA-FUS

LEAF

156

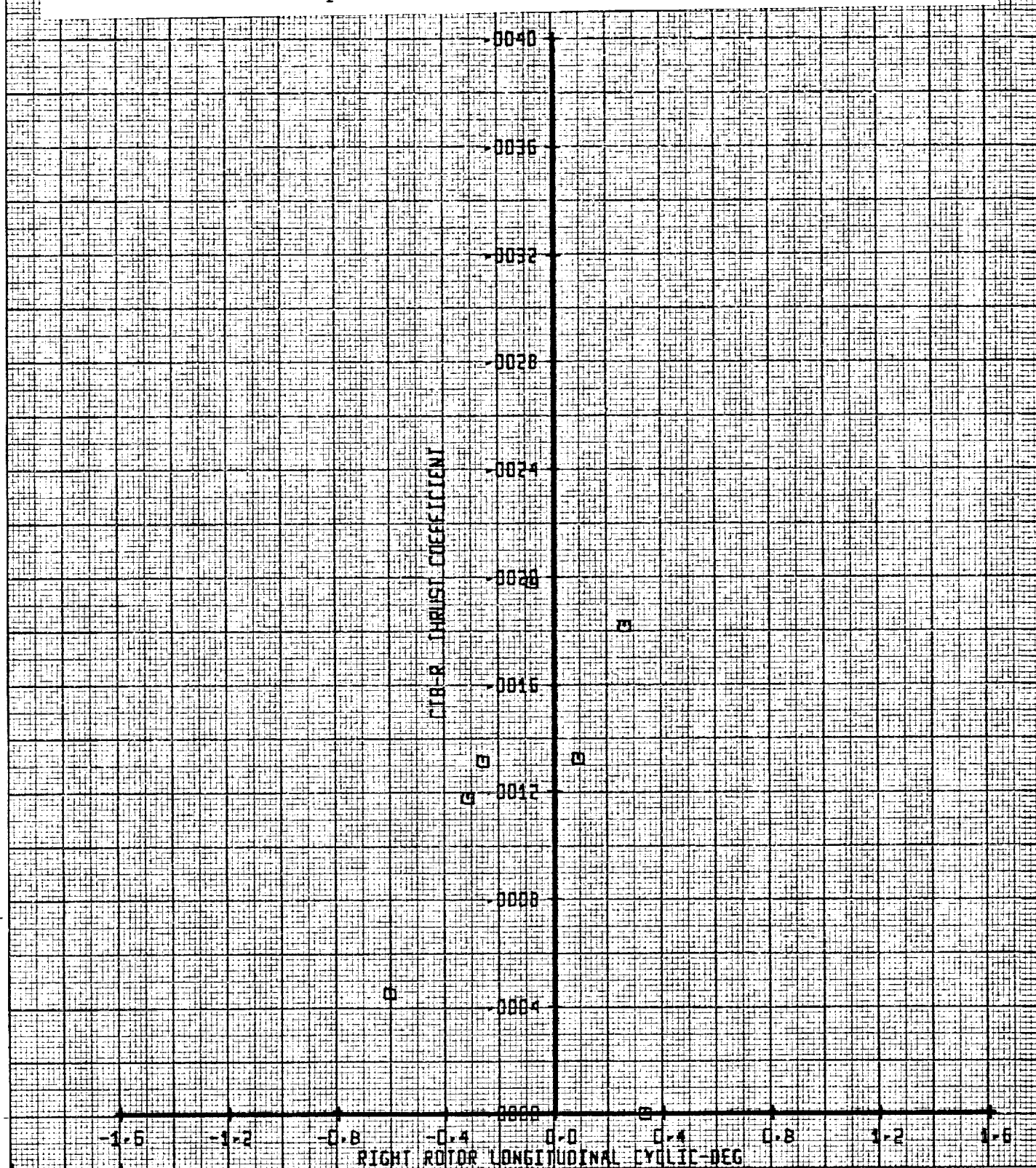


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Figure 17-049. Right Rotor Power Coefficient Versus Right Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BVWT 182 VR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

SYM

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

156

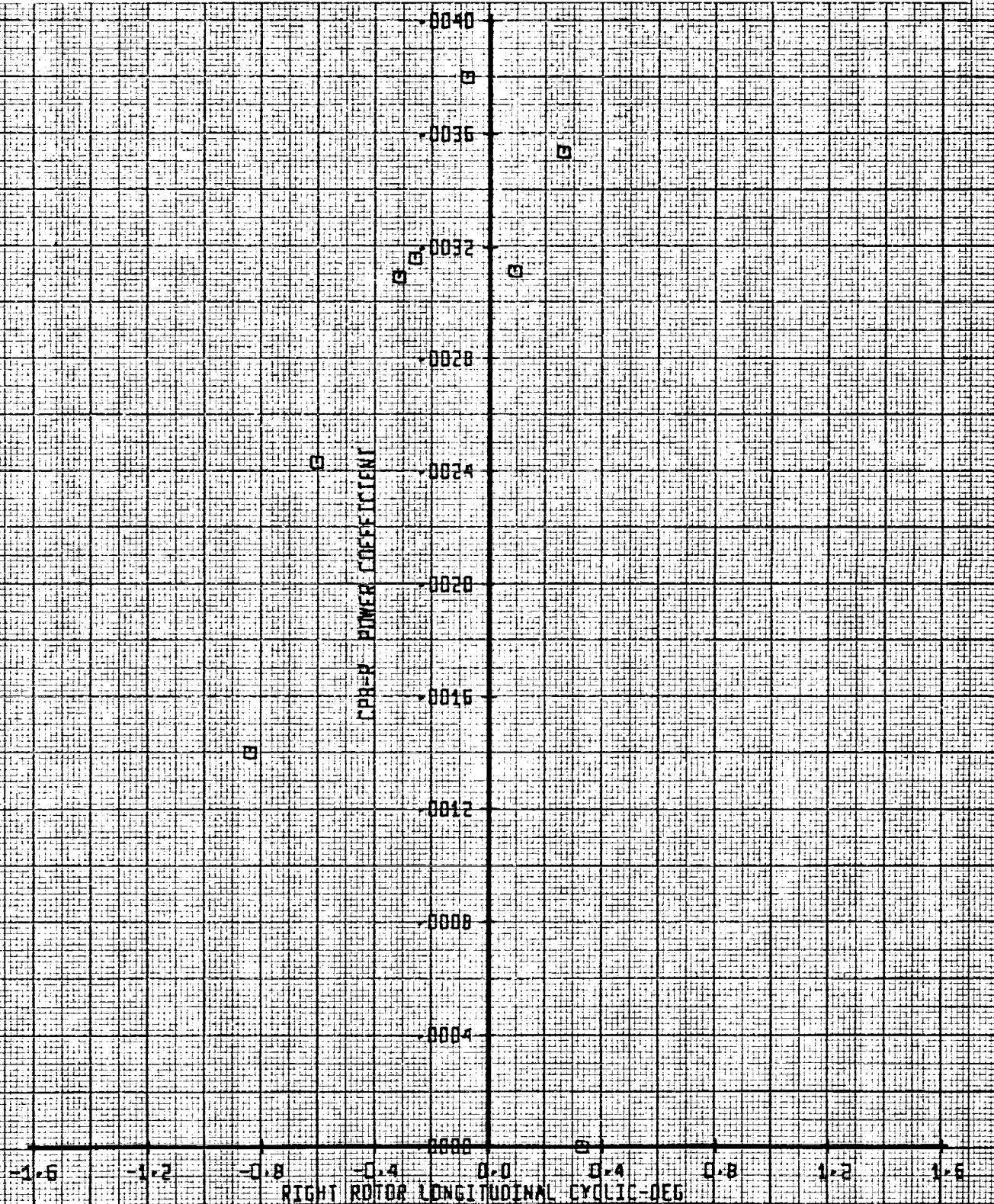
-1

300

0

0

Figure 17-050. Right Rotor Power Coefficient Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 300 Knots.



469

SET 107
BVWT 182

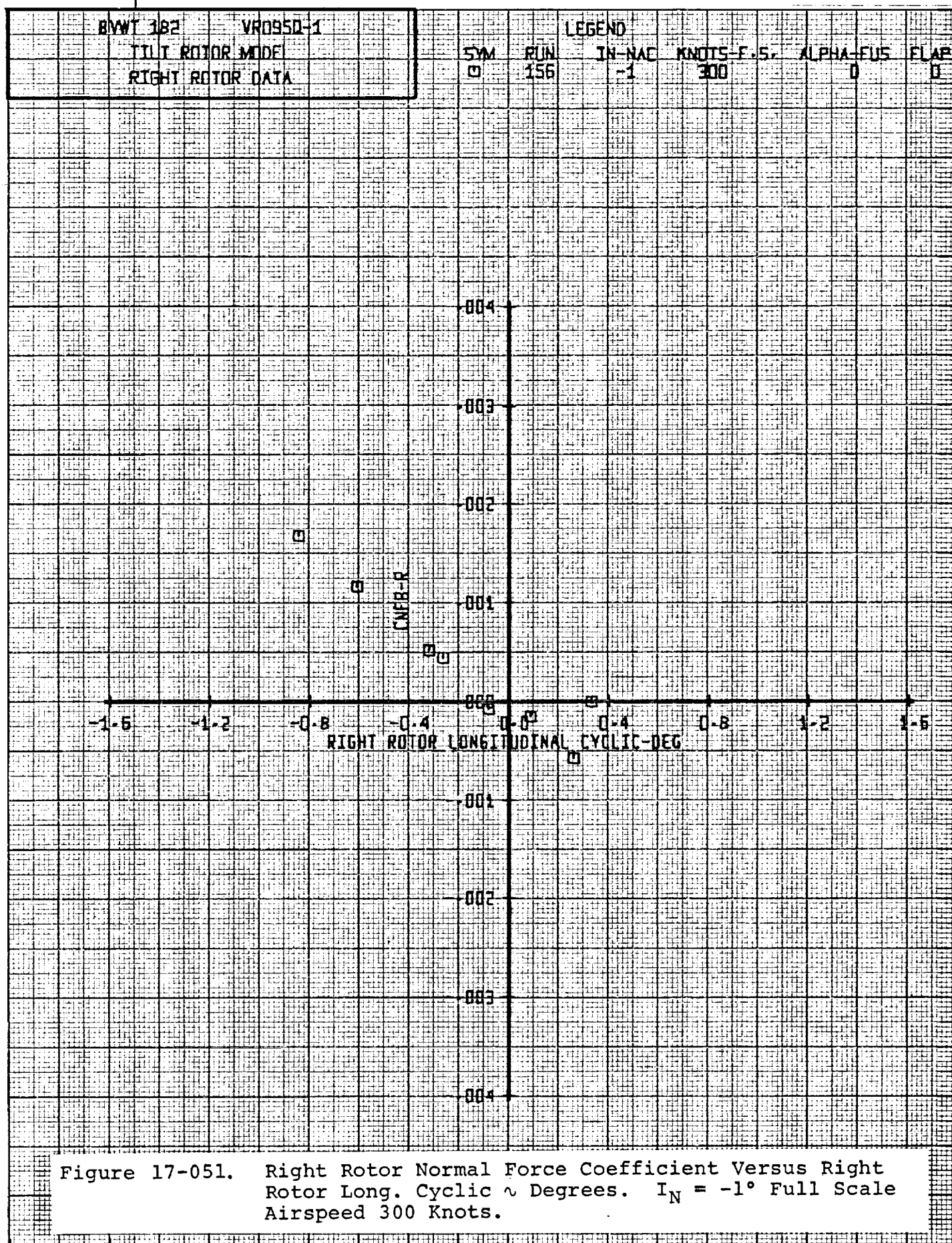


Figure 17-051. Right Rotor Normal Force Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

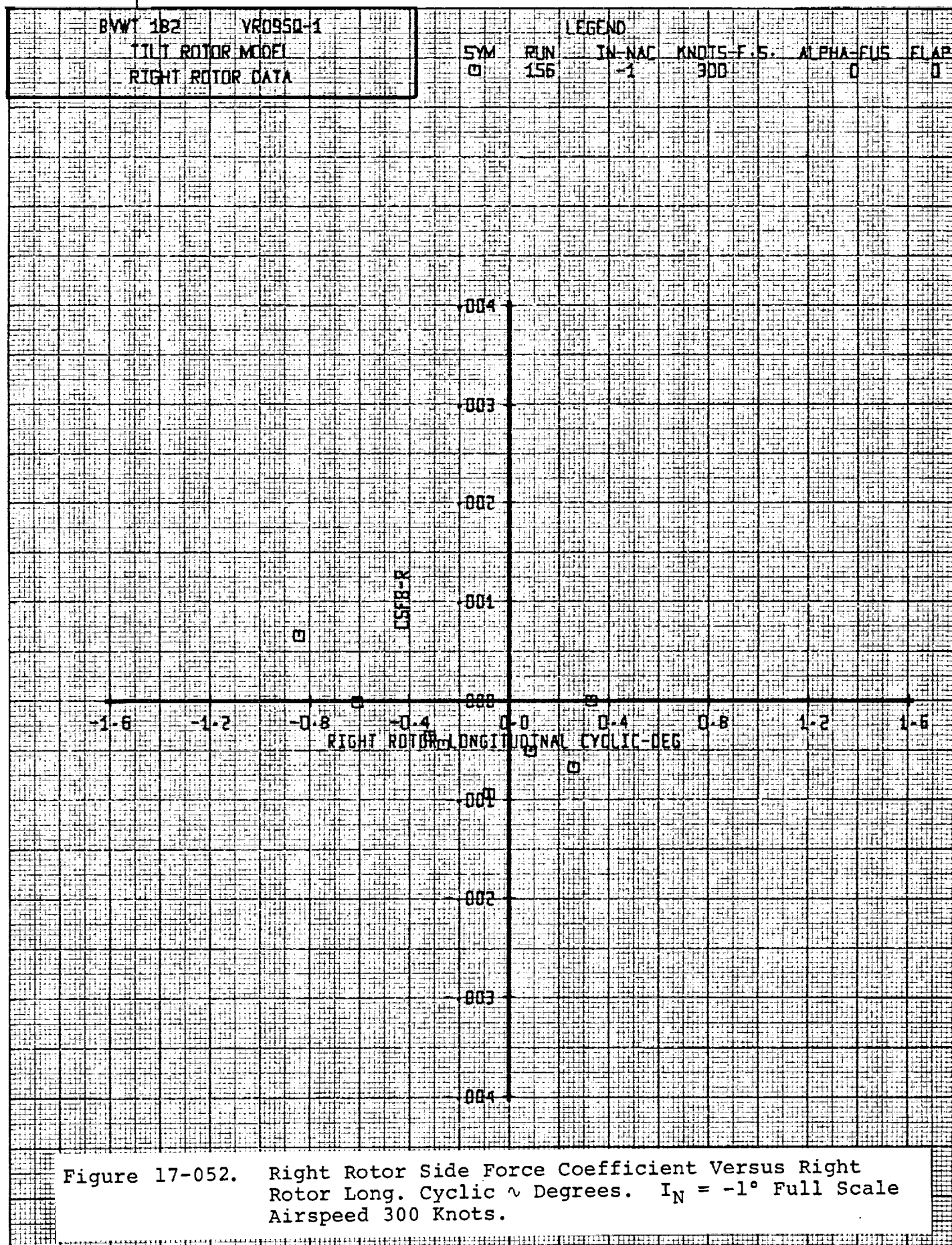


Figure 17-052. Right Rotor Side Force Coefficient Versus Right Rotor Long. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

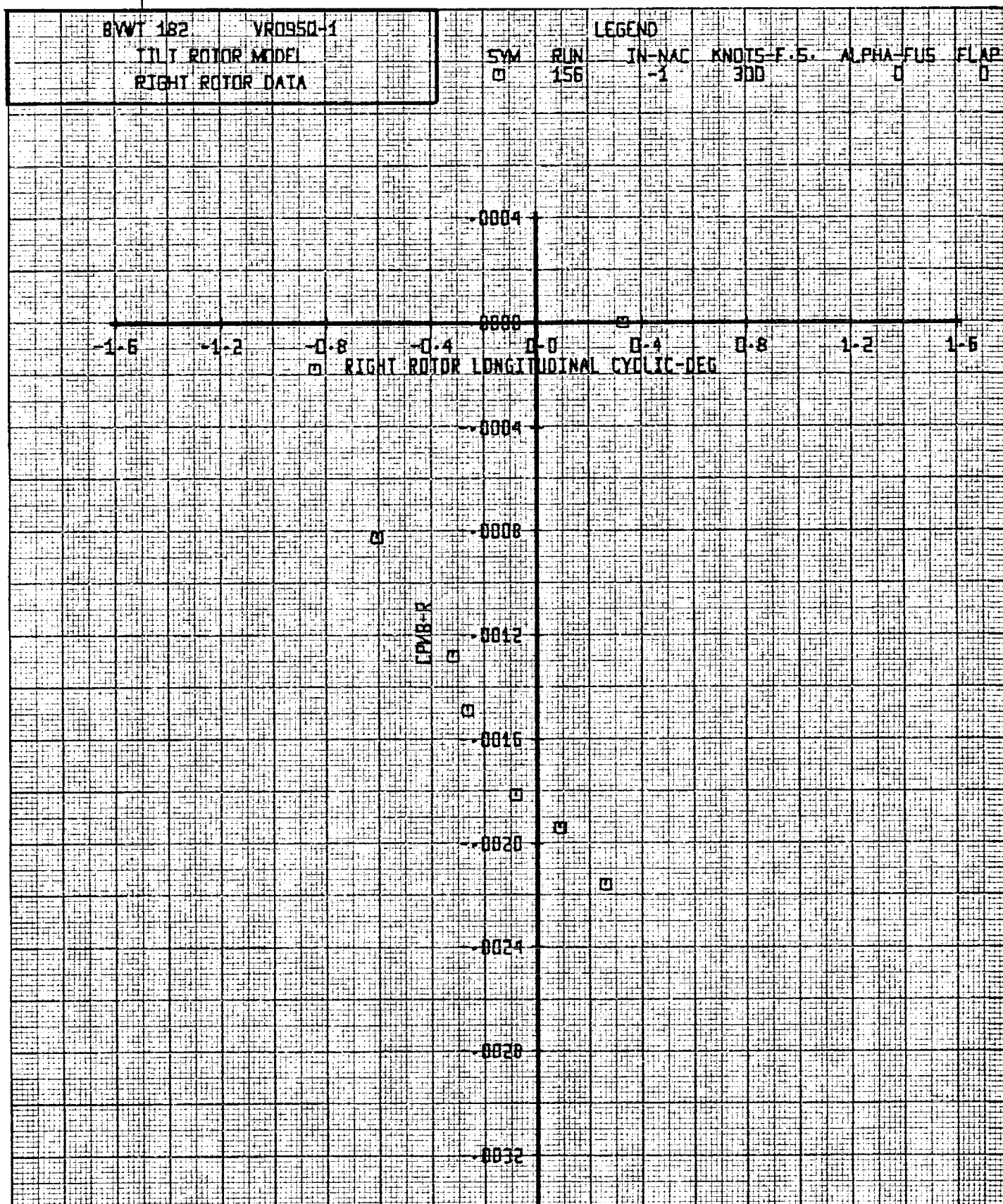


Figure 17-053. Right Rotor Pitching Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

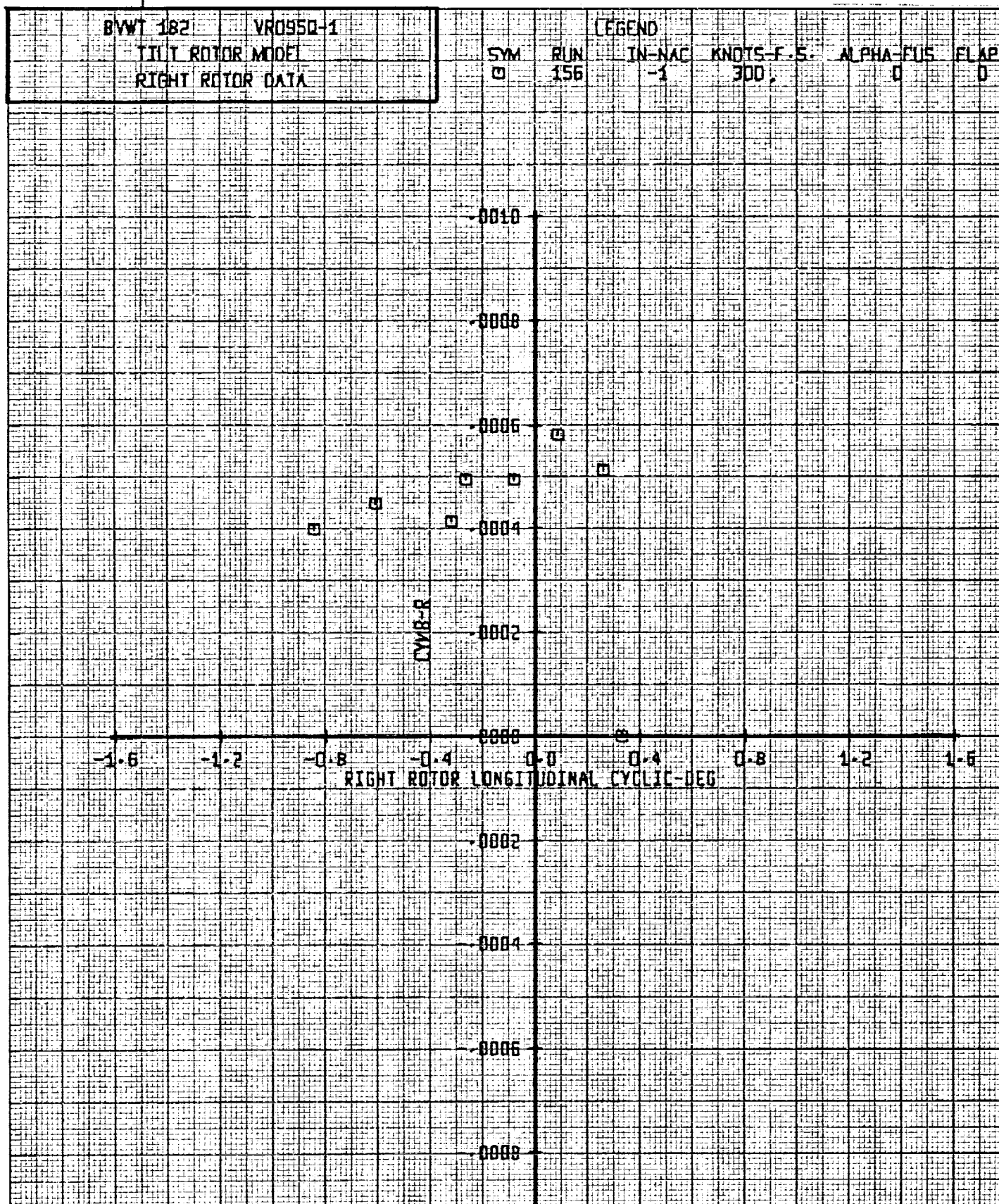
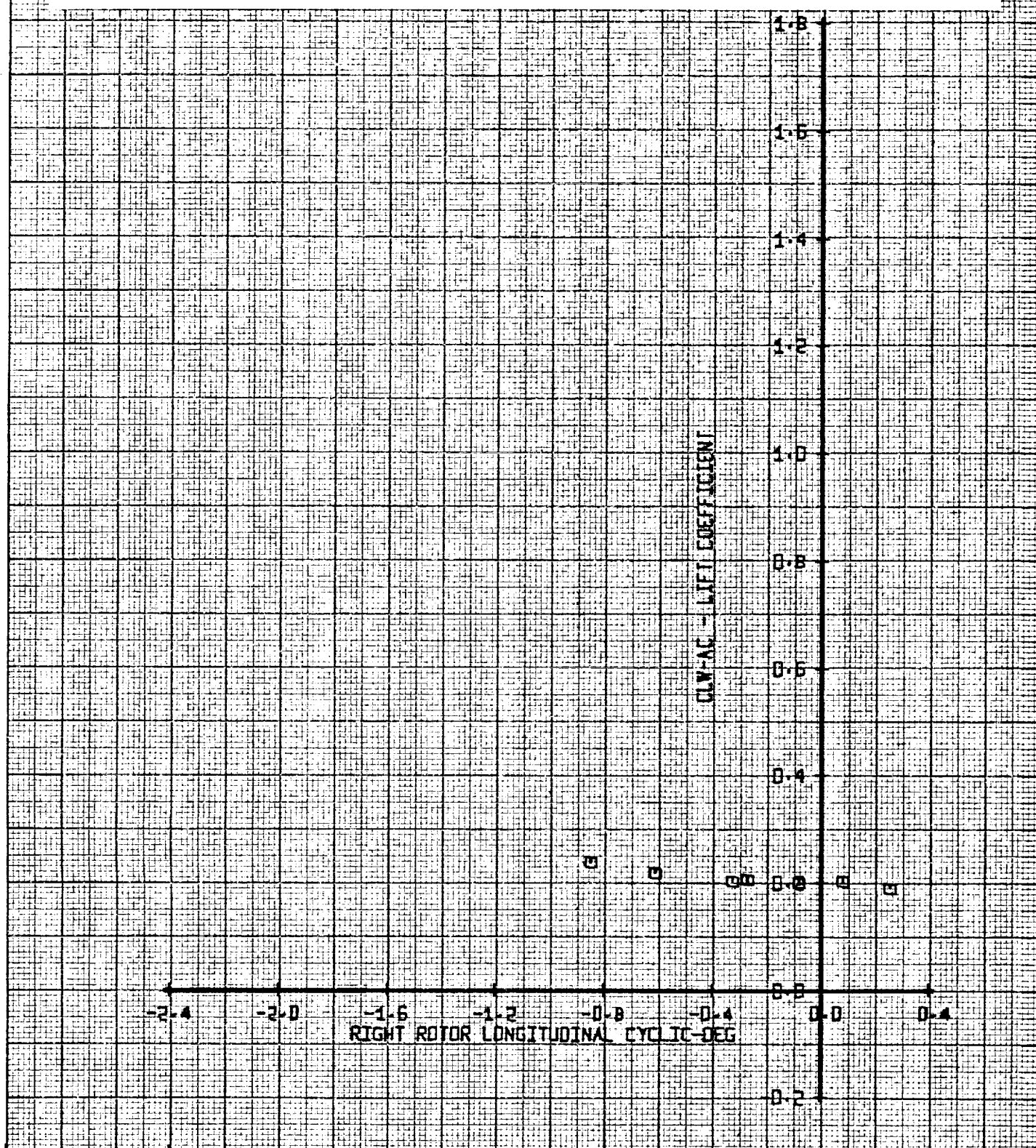
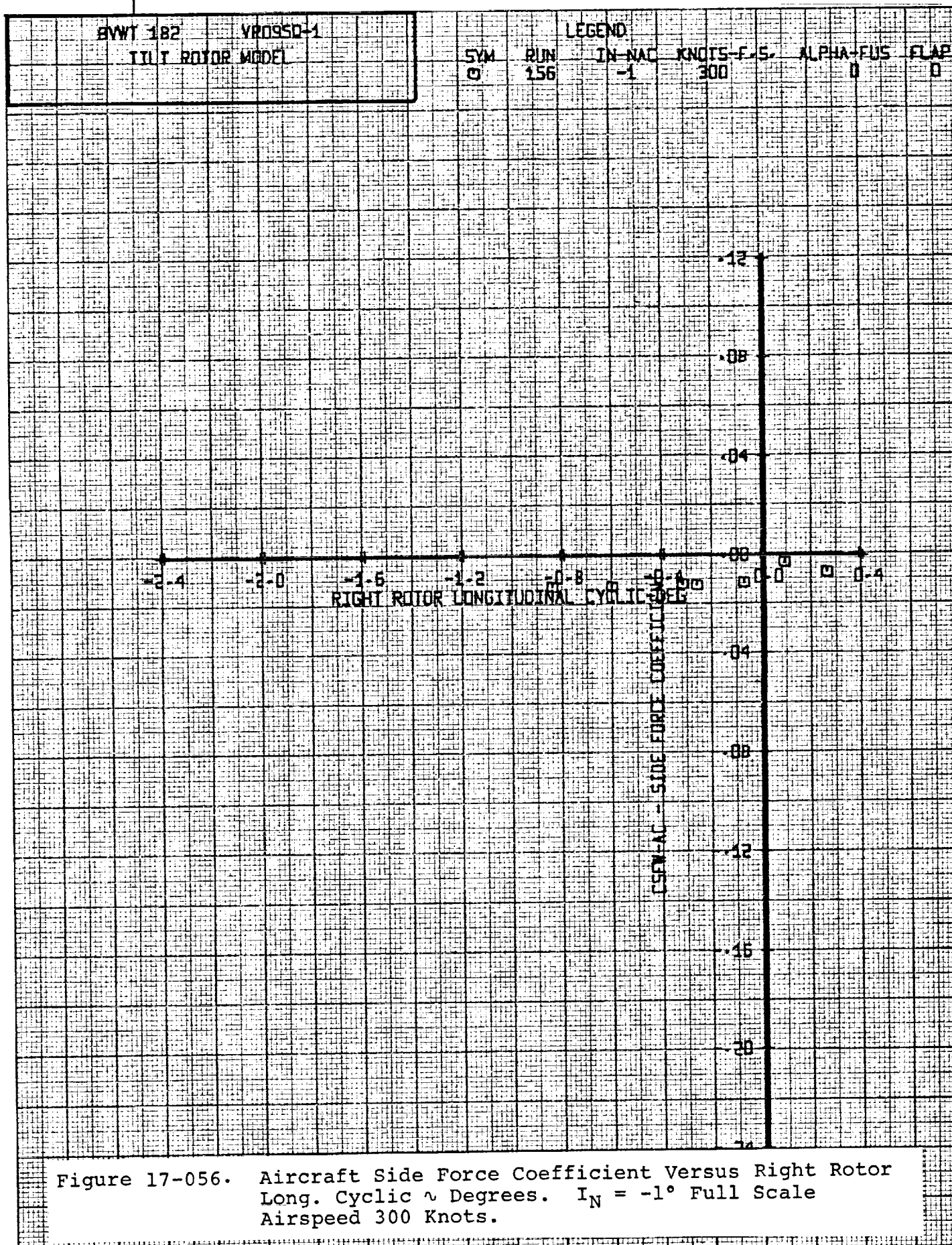


Figure 17-054 . Right Rotor Yawing Moment Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

BVWT 182	VR0950-1	LEGEND							
TILT ROTOR MODEL		SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP		
		0	156	-1	300	0	0		

Figure 17-055. Aircraft Lift Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.





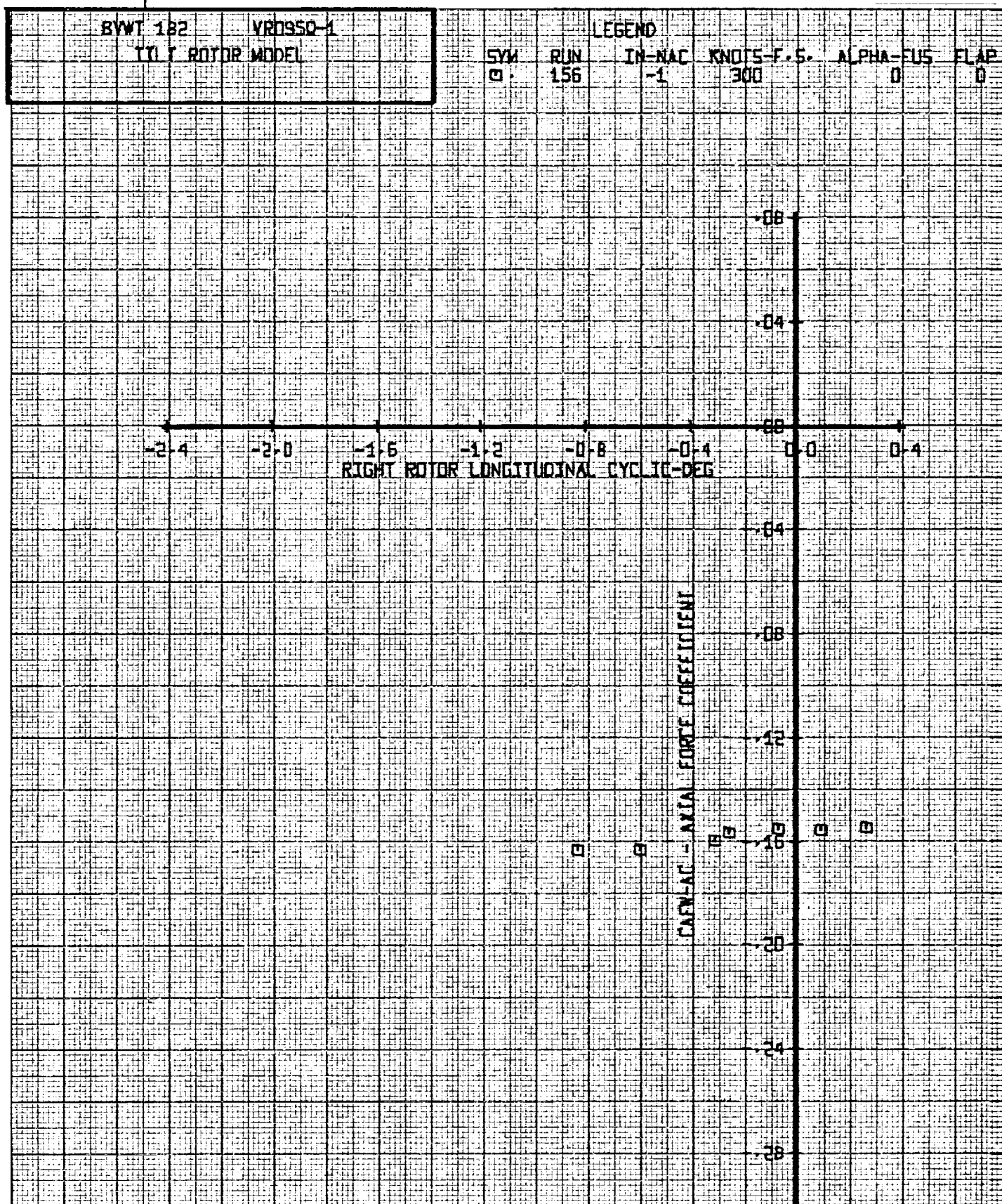


Figure 17-057. Aircraft Axial Force Coefficient Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

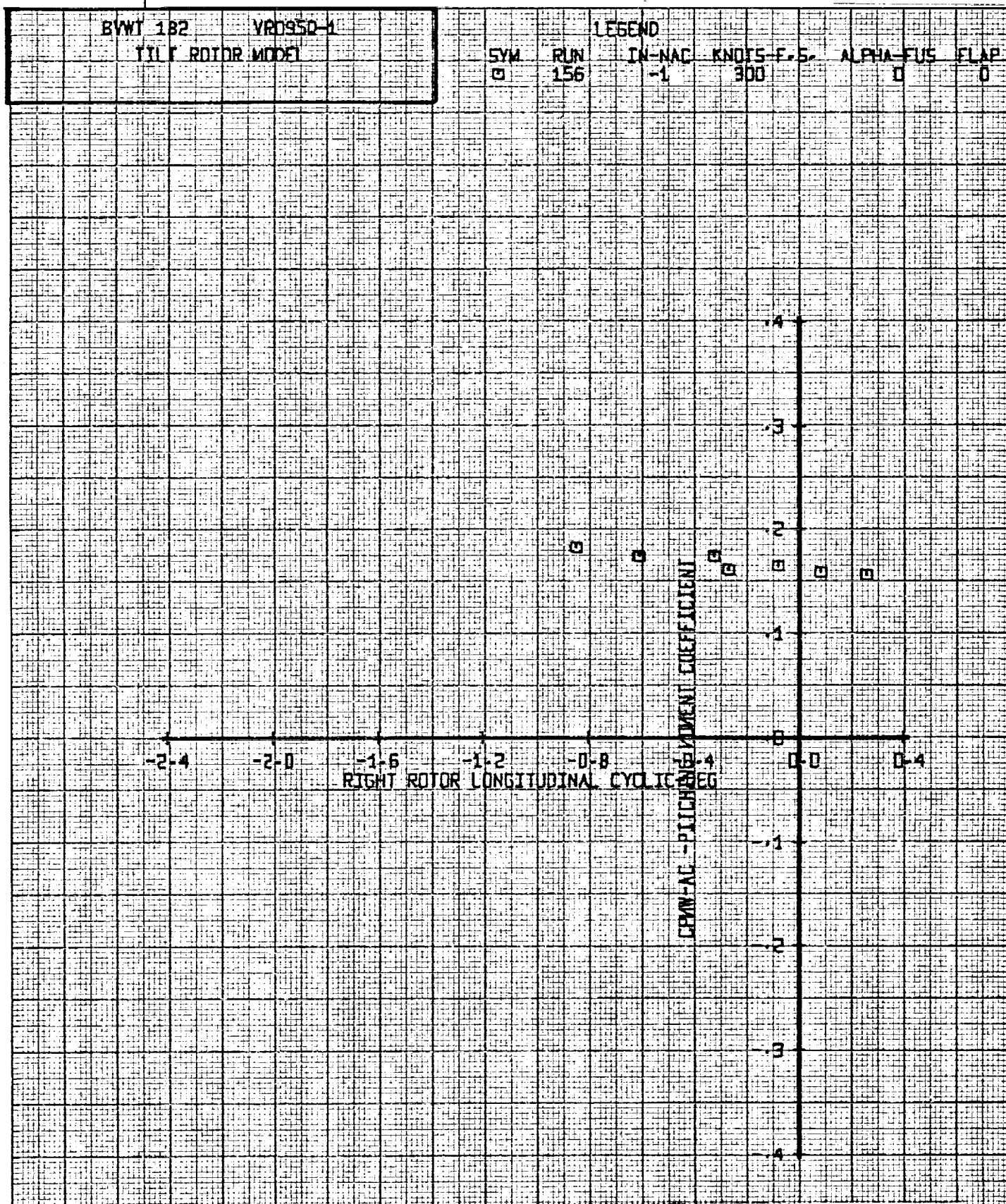


Figure 17-058. Aircraft Pitching Moment Coefficient Versus Right Rotor Long. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

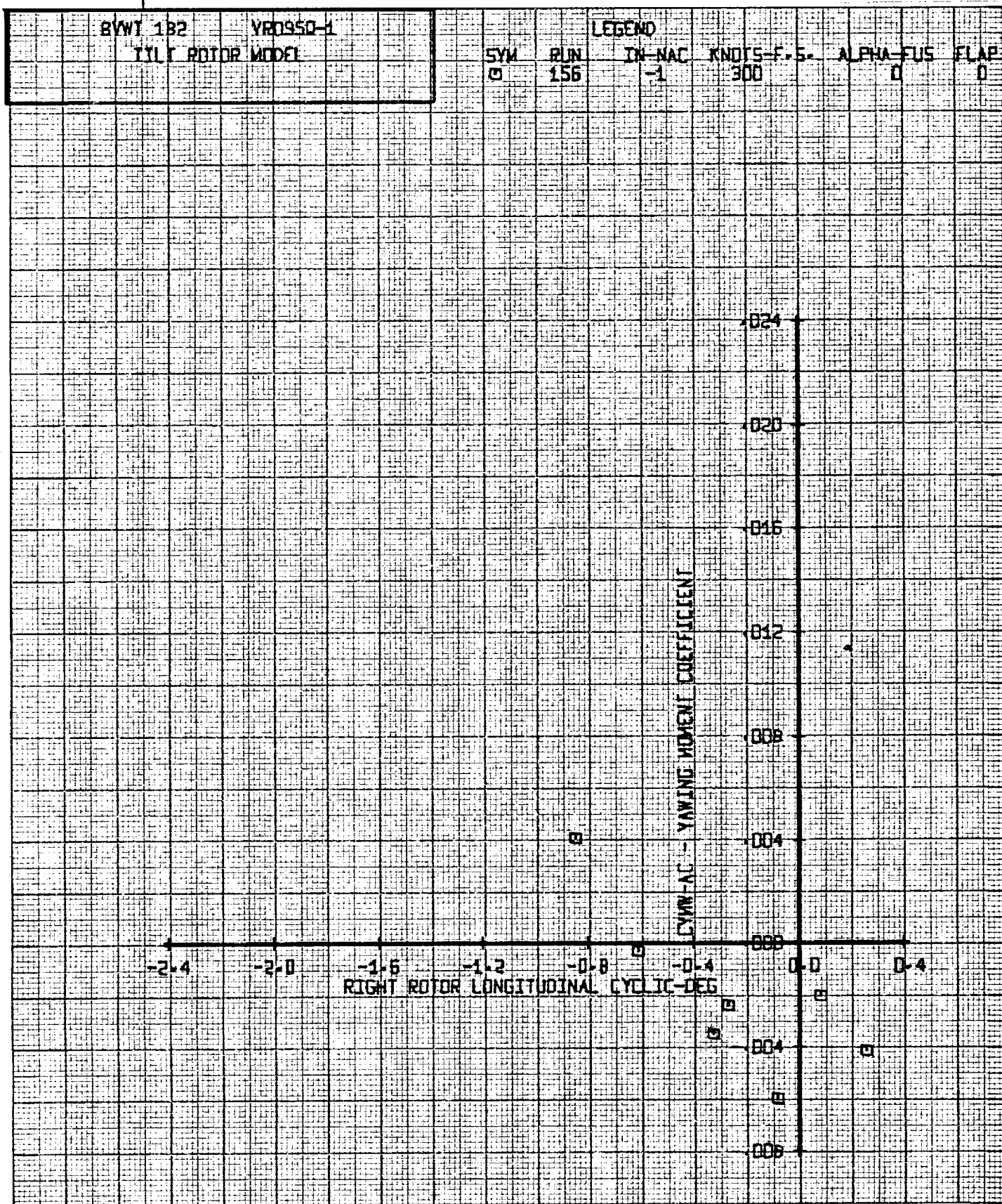
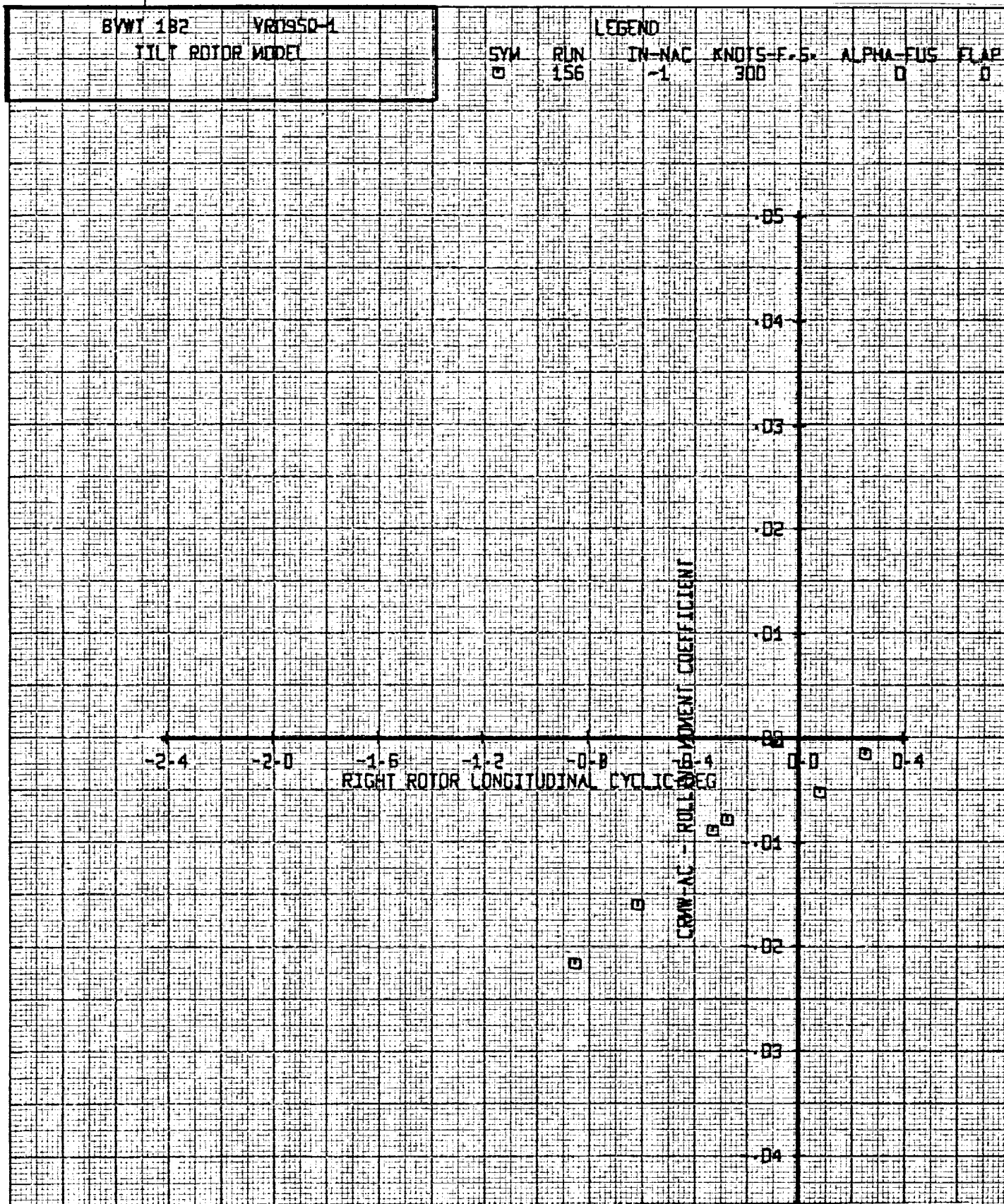


Figure 17-059. Aircraft Yawing Moment Coefficient Versus Right Rotor Long. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BVWT 182 VR0950-1
TILT ROTOR MODEL
RIGHT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.S. ALPHA-FUS FLAP
□ 156 -1 300 0 0

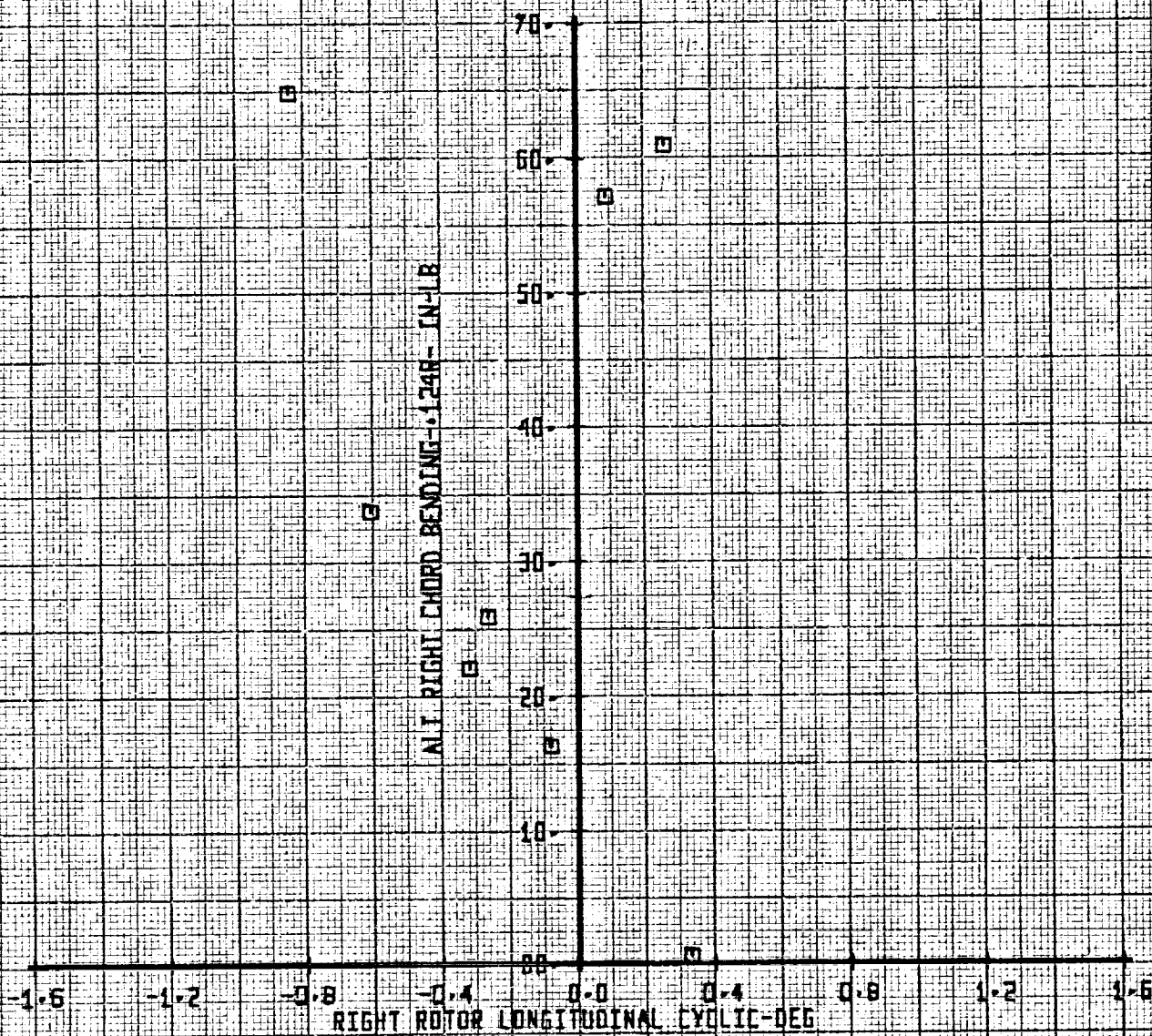


Figure 17-061. Alt. Right Chord Bending Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

BVWT 182 YR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM

RUN

LEGEND

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

156

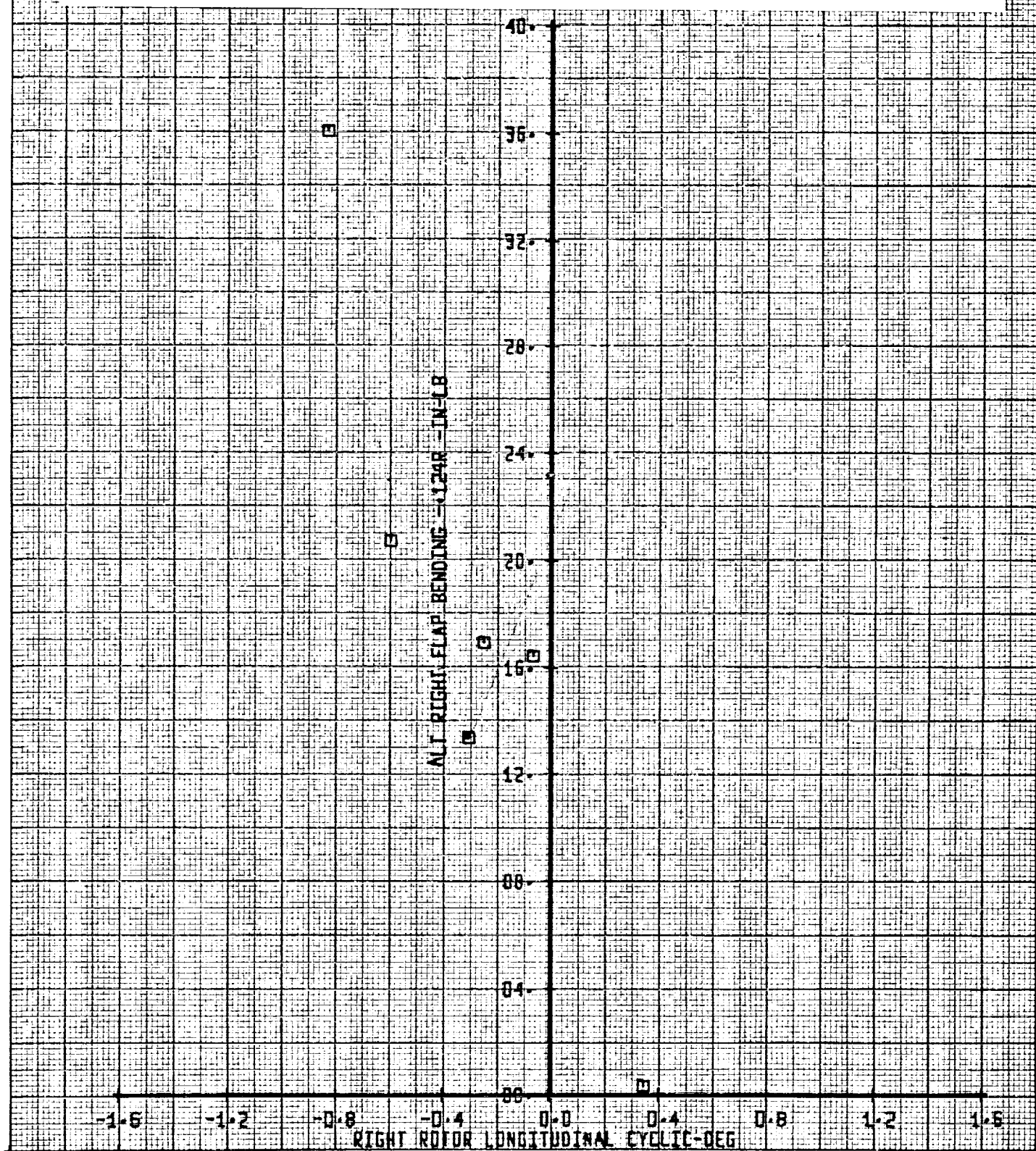
-1

300

0

0

Figure 17-062. Alt. Right Flap Bending Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



450

SET 107
BVWT 182

BVWT 182 VR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

5M

RUN

IN-NAC

KNOTS-F.S.

ALPHA-FUS

FLAP

0

156

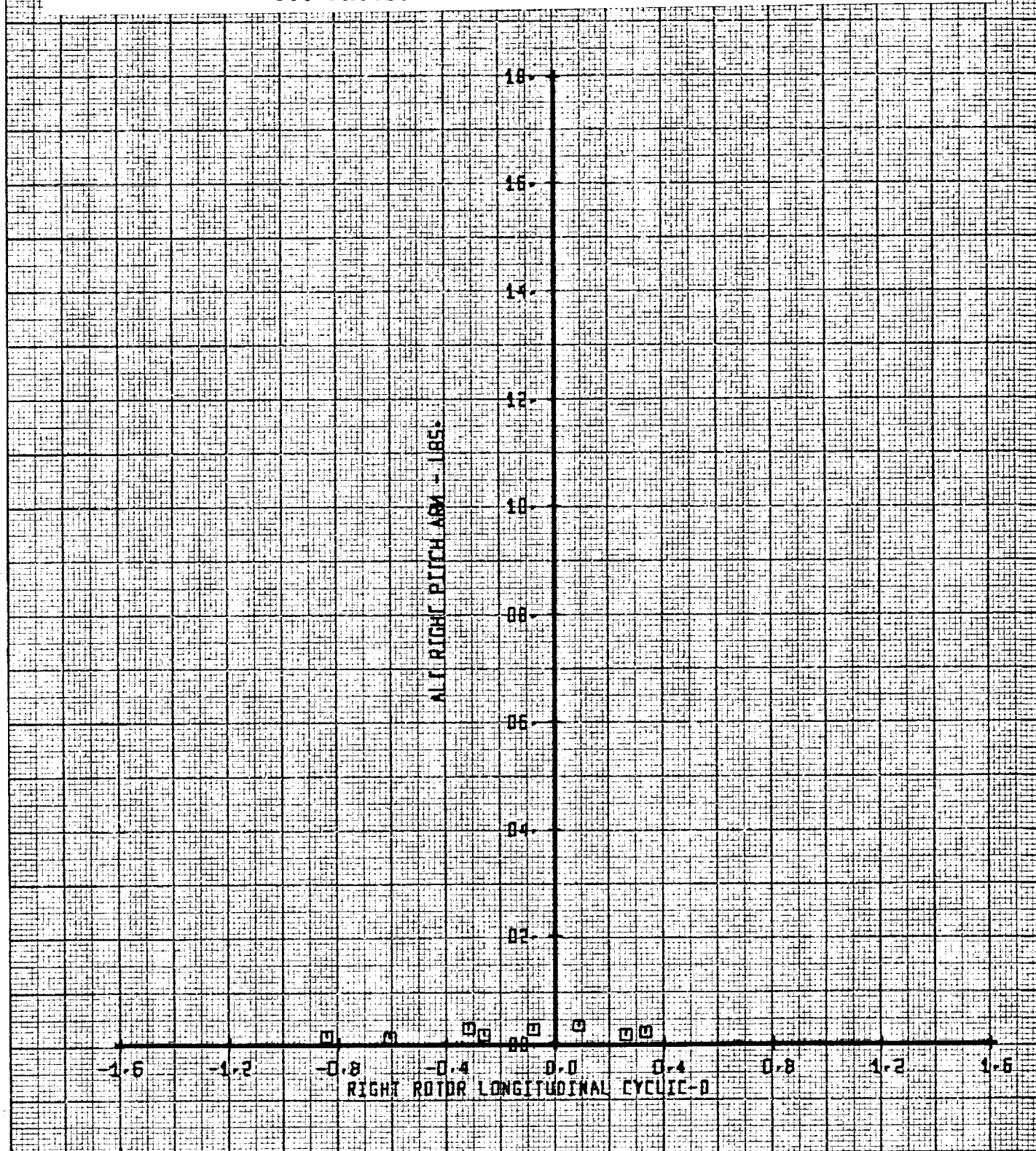
-1

300

0

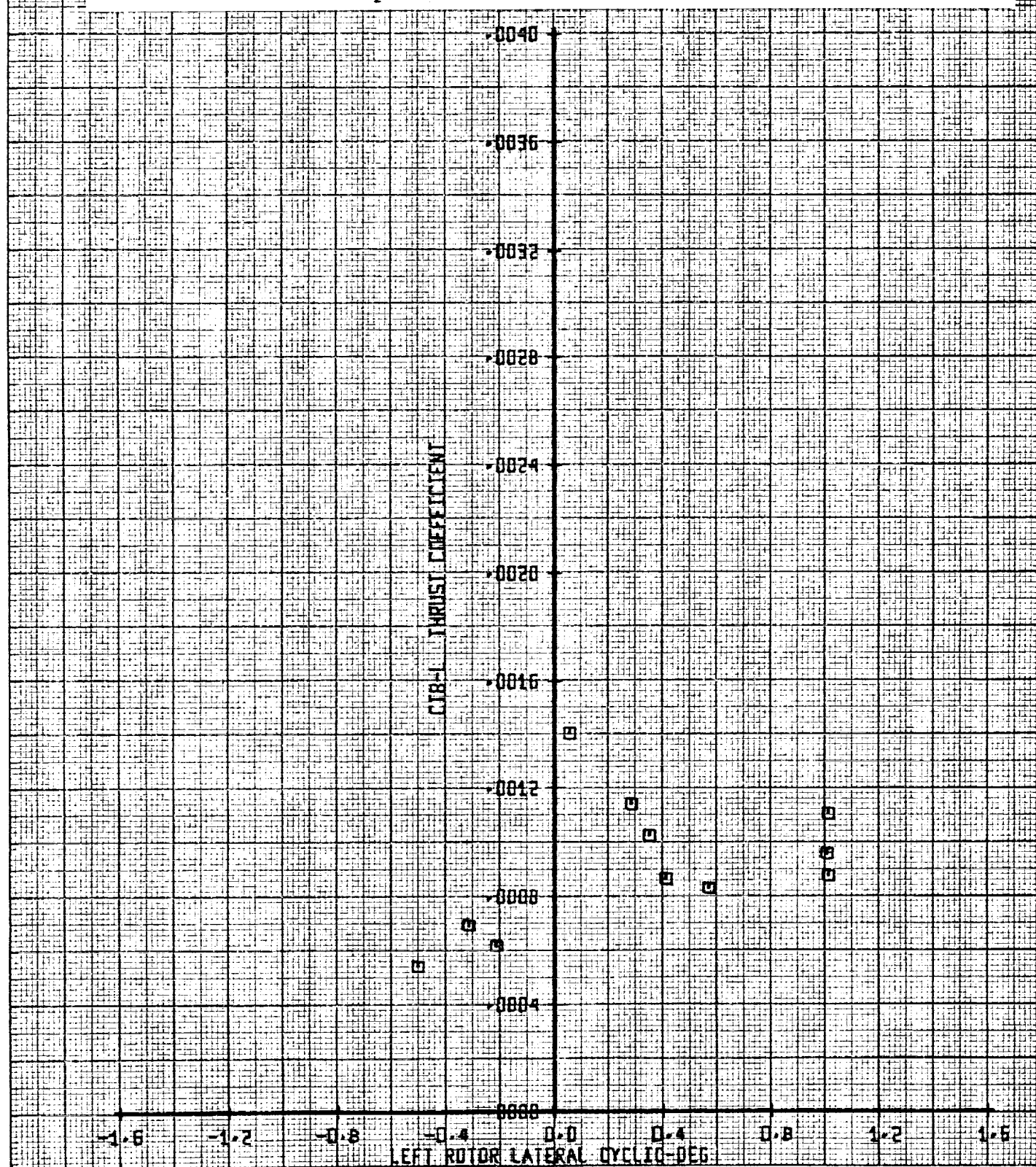
0

Figure 17-063. Alt. Right Pitch Link Load Versus Right Rotor Long. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BVWT 182	VR0950-1	LEGEND				
TILT ROTOR MODEL		SYM	RUN	IN-NAC	KNOTS-F.F.S.	ALPHA-FUS
LEFT ROTOR DATA		□	155	-1	300	0
						FLAP
						0

Figure 17-064. Left Rotor Thrust Coefficient Versus Left Rotor Lat. Cyclic ψ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BYWT 182	VR0950-1
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III ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM

KLIN

IN-NAC

KNOTS-F.E.

ALPHA-F15

FLAP

2

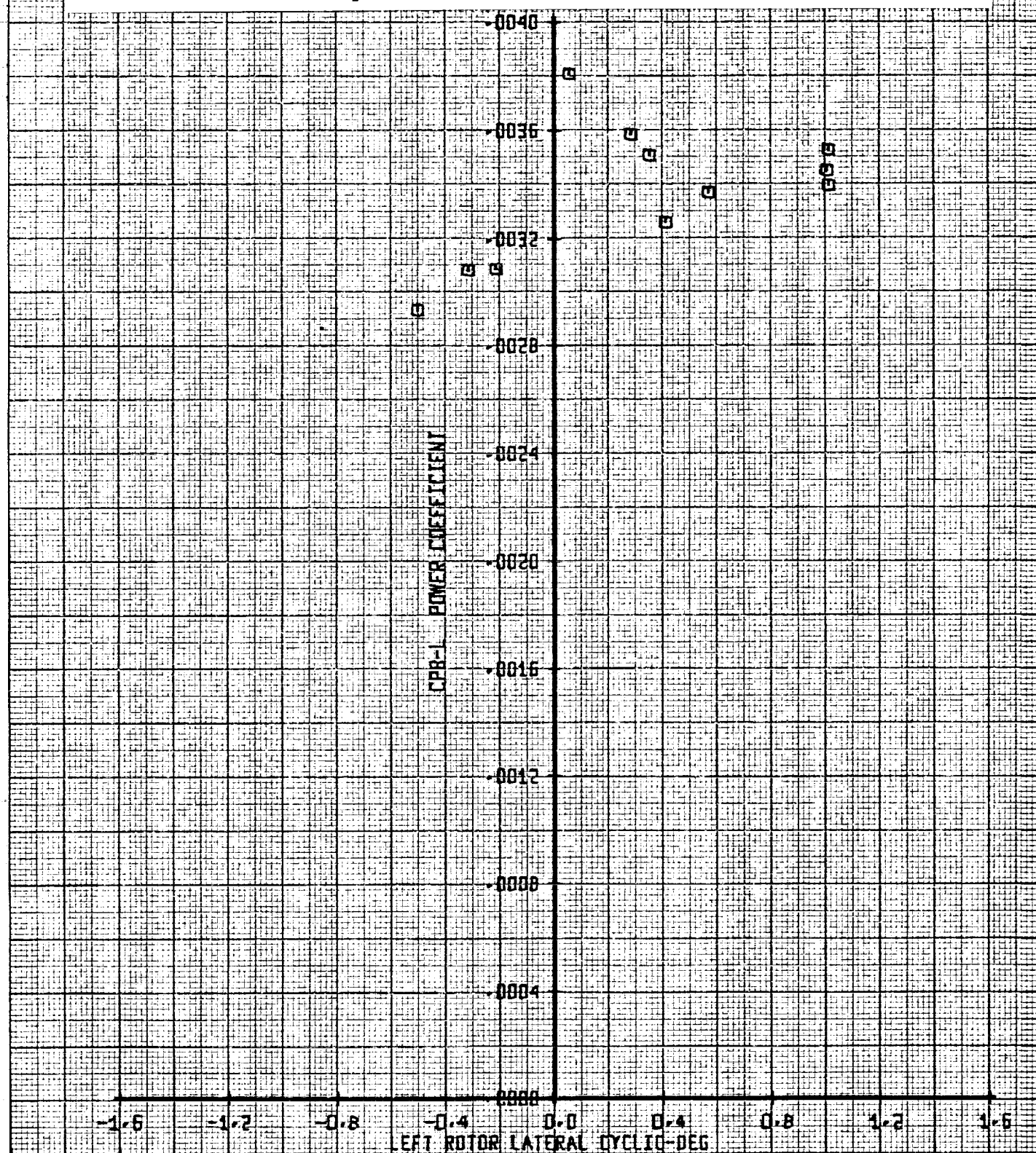
155

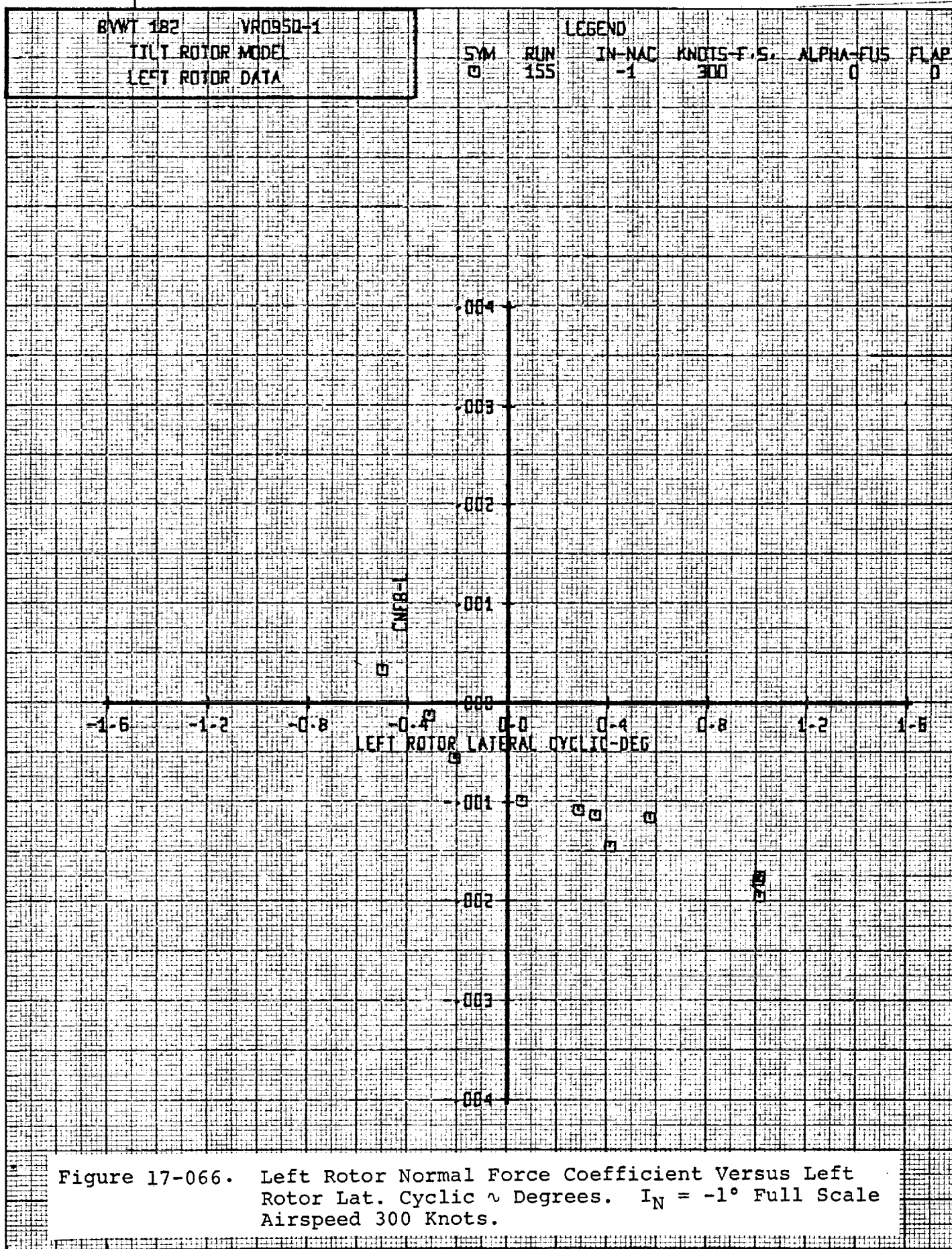


300

1

Figure 17-065. Left Rotor Power Coefficient Versus Left Rotor Lat. Cyclic α Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 300 Knots.





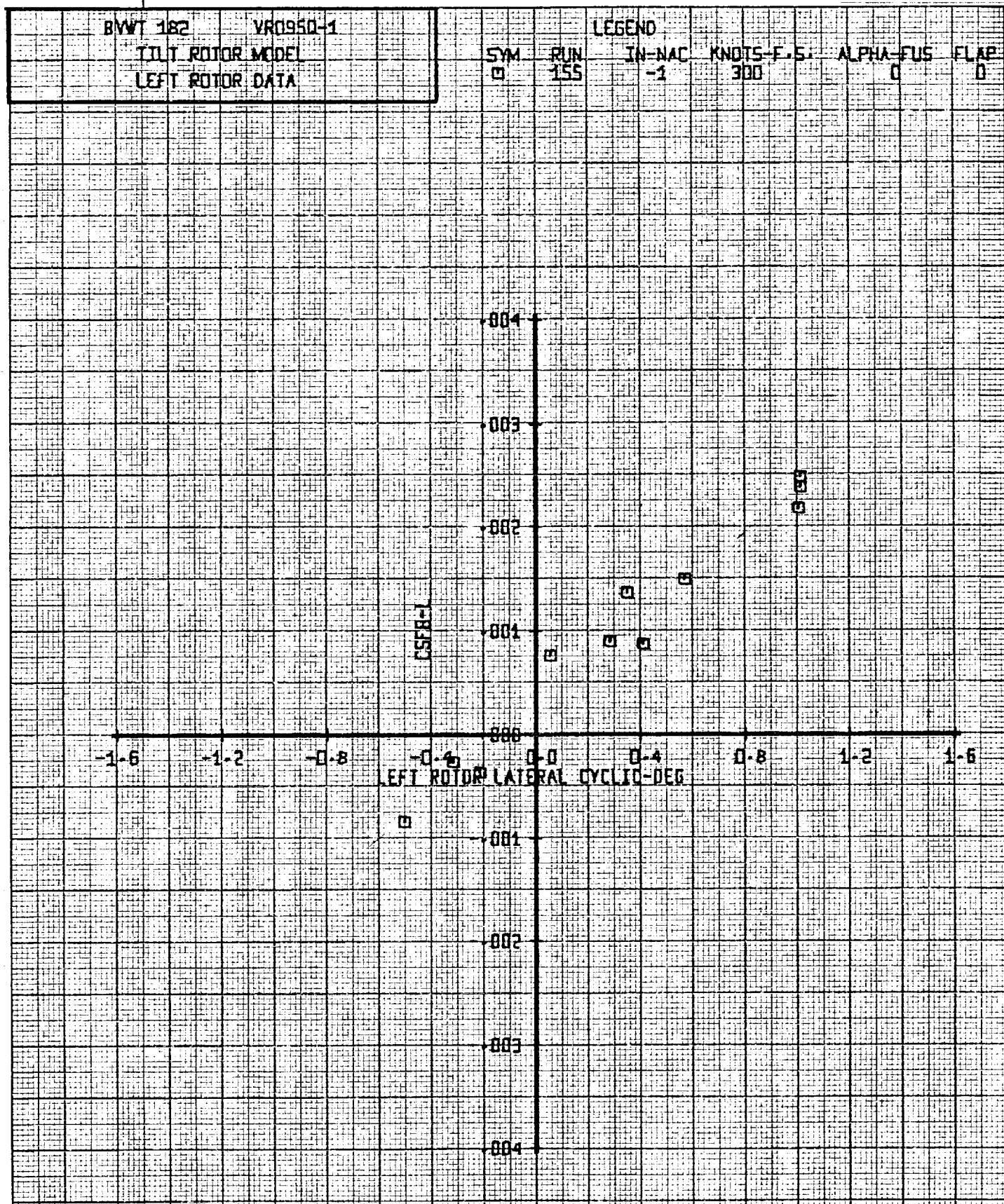


Figure 17-067. Left Rotor Side Force Coefficient Versus Left Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

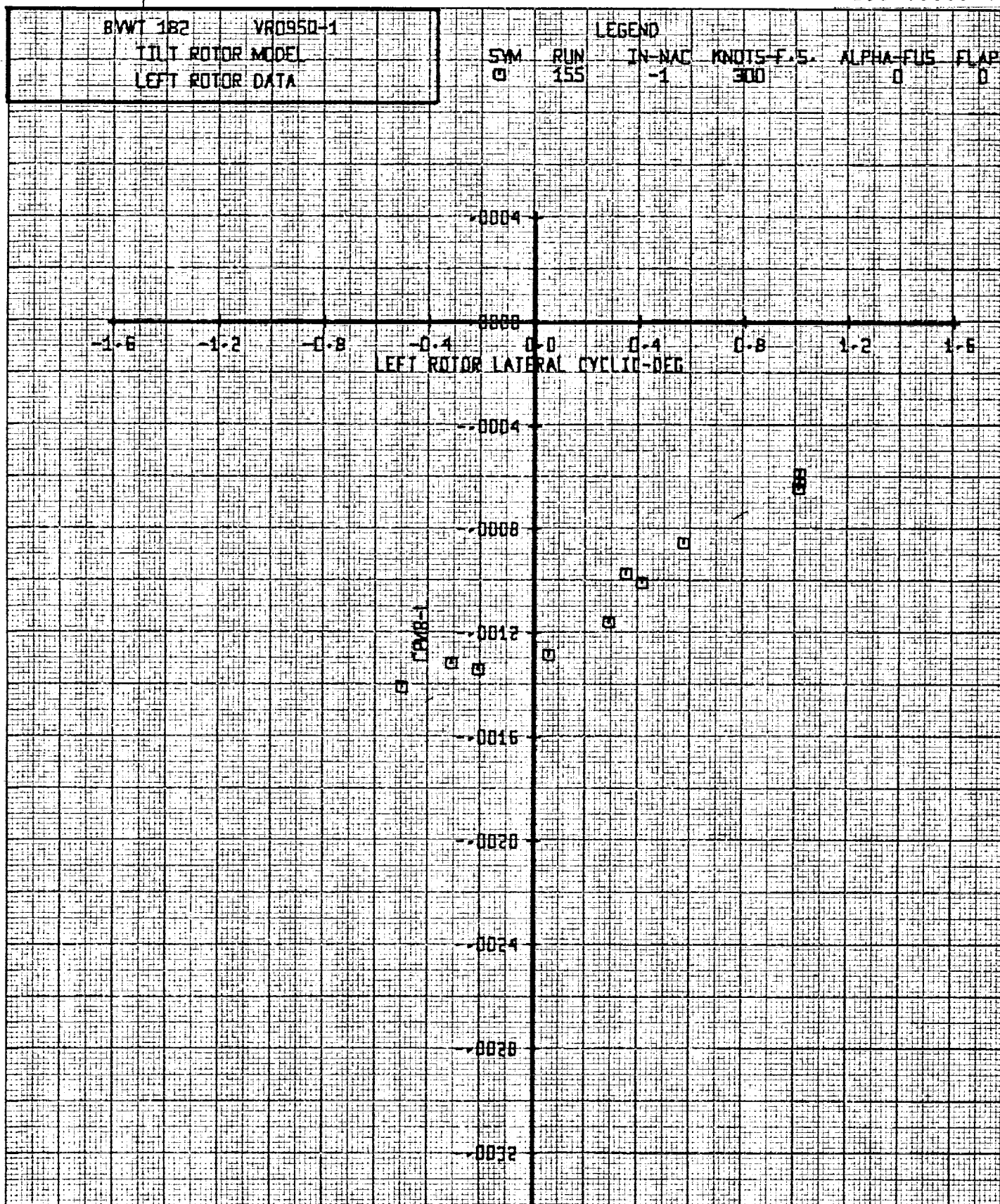


Figure 17-068. Left Rotor Pitching Moment Coefficient Versus Left Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

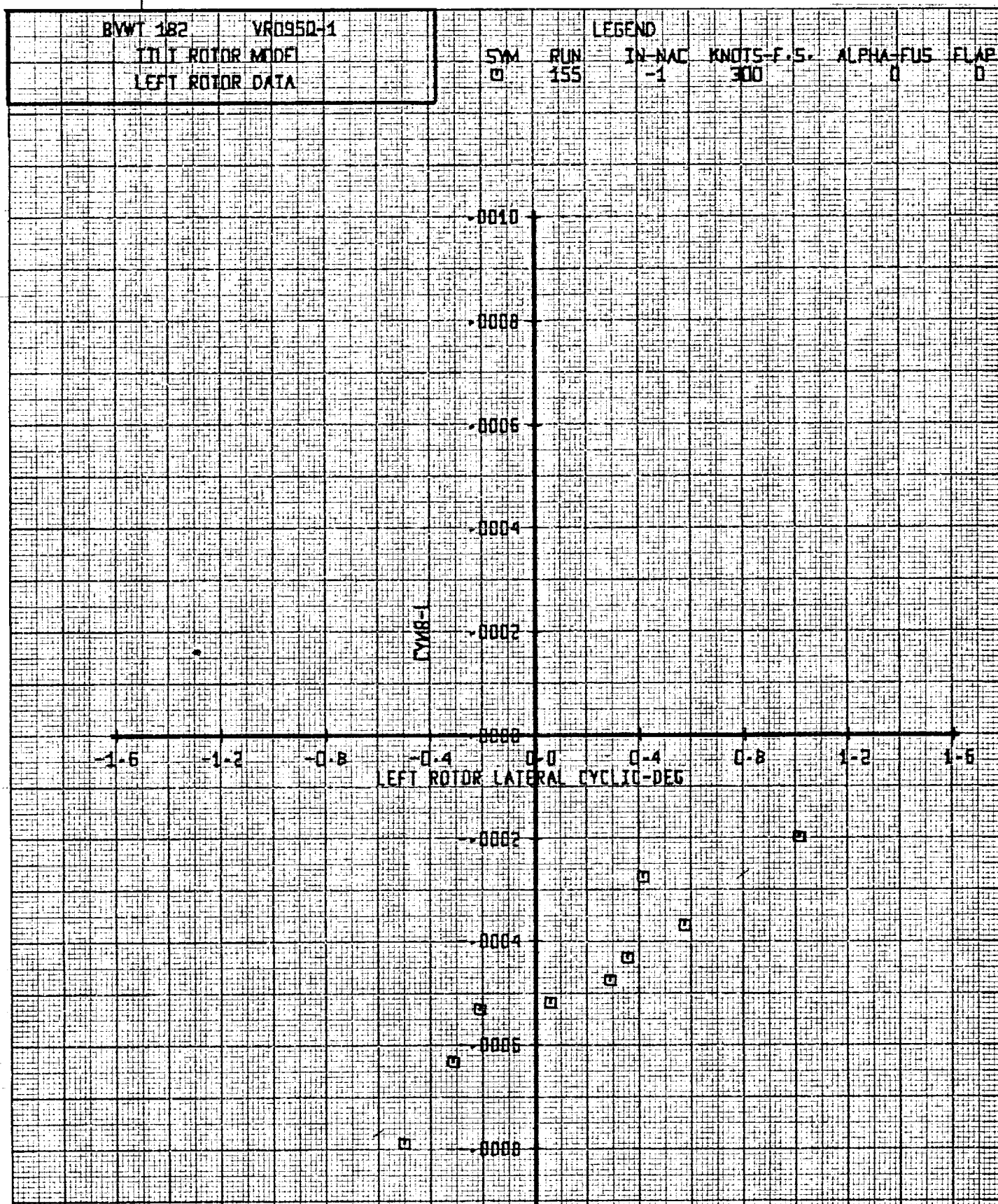


Figure 17-069. Left Rotor Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

BYWT 182 VR0950-1

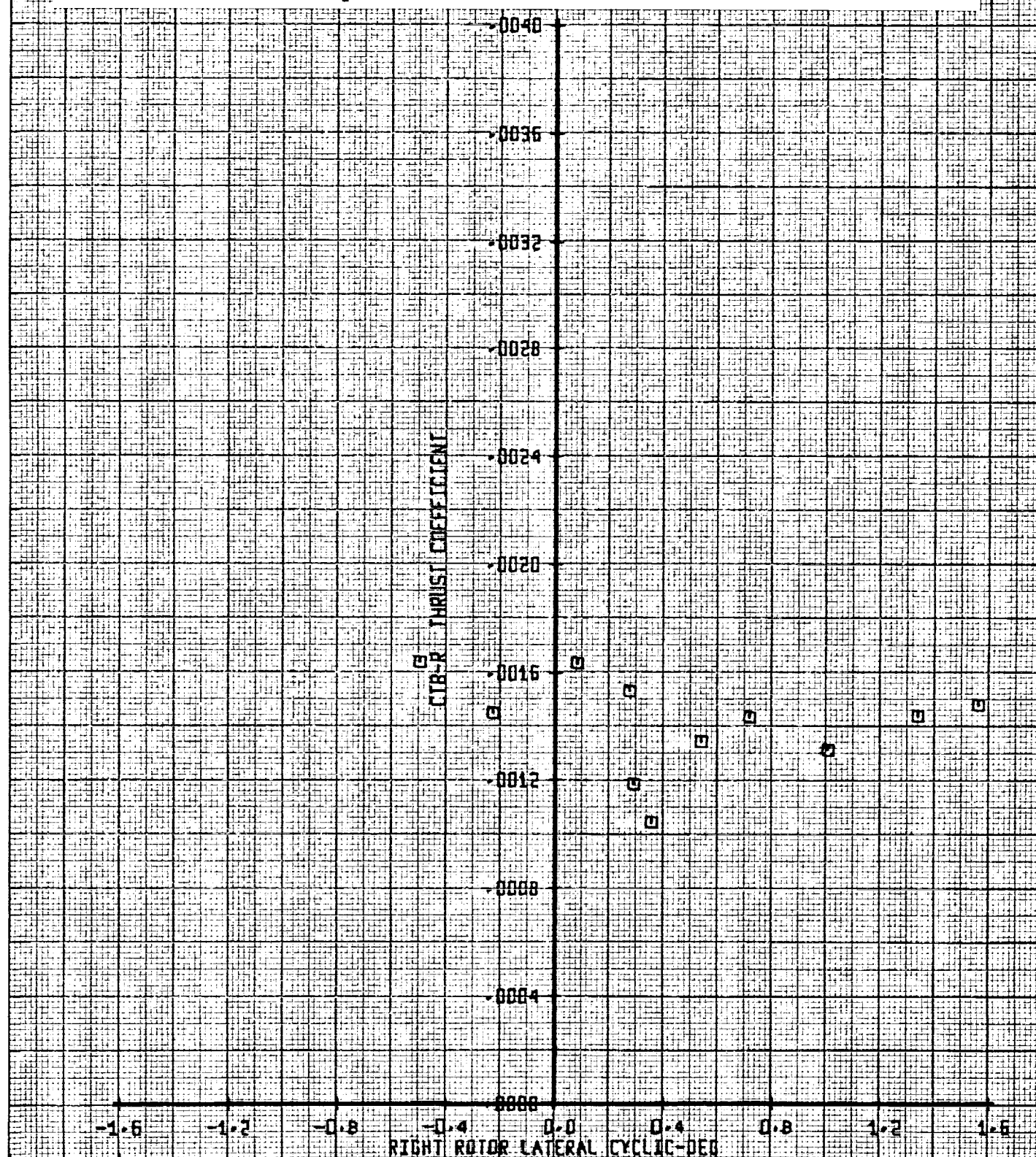
TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND

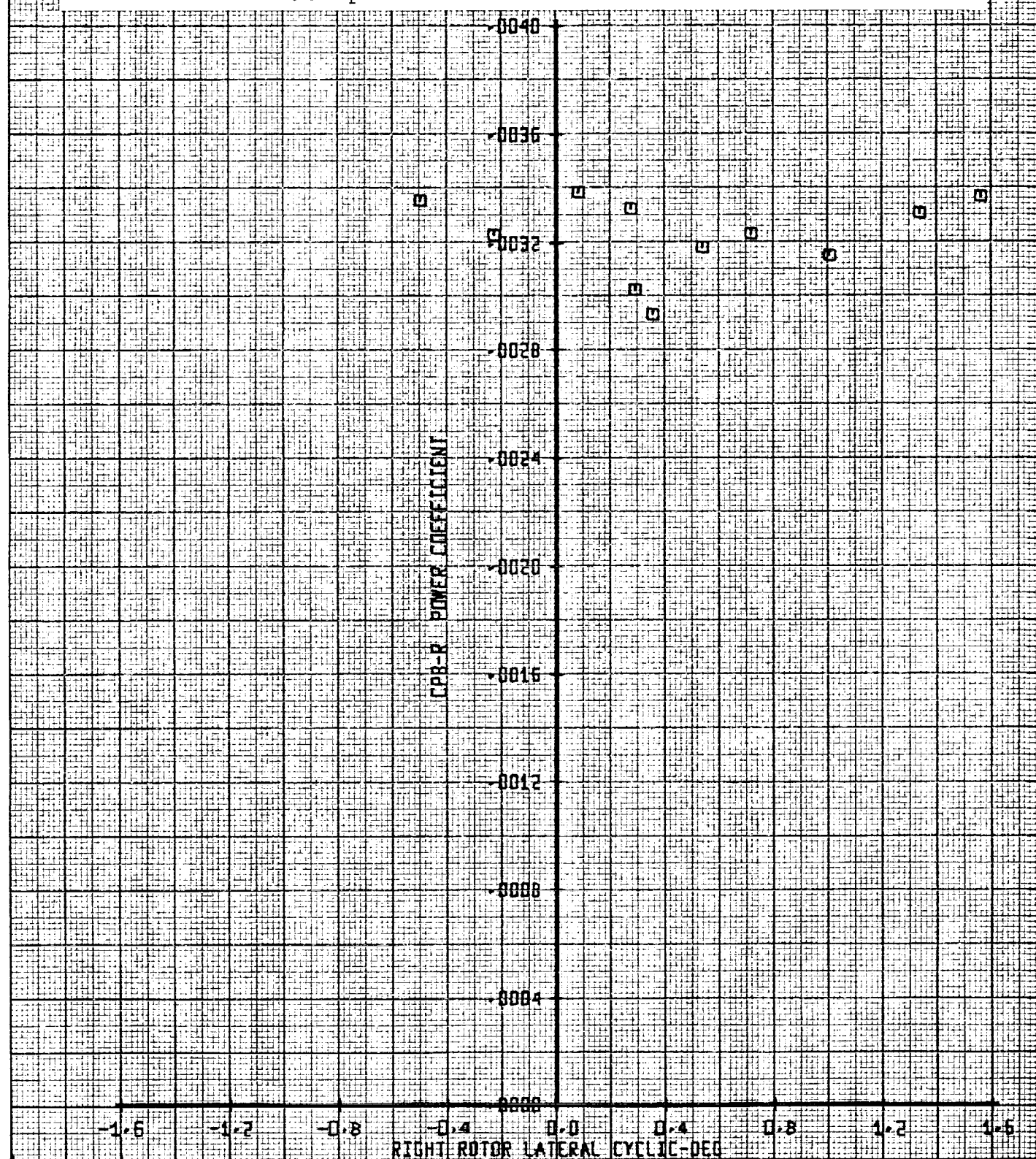
SYM
□RUN
155IN-NAC
-1KNOTS-F.S.
300ALPHA-FUS
0FLAP
0

Figure 17-070. Right Rotor Thrust Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 300 Knots.



BVWT 182	VR0950-1	LEGEND				
TILT ROTOR MODEL		SVM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS
RIGHT ROTOR DATA		0	155	-1	300	0
						FLAP
						0

Figure 17-071. Right Rotor Power Coefficient Versus Right Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 300 Knots.



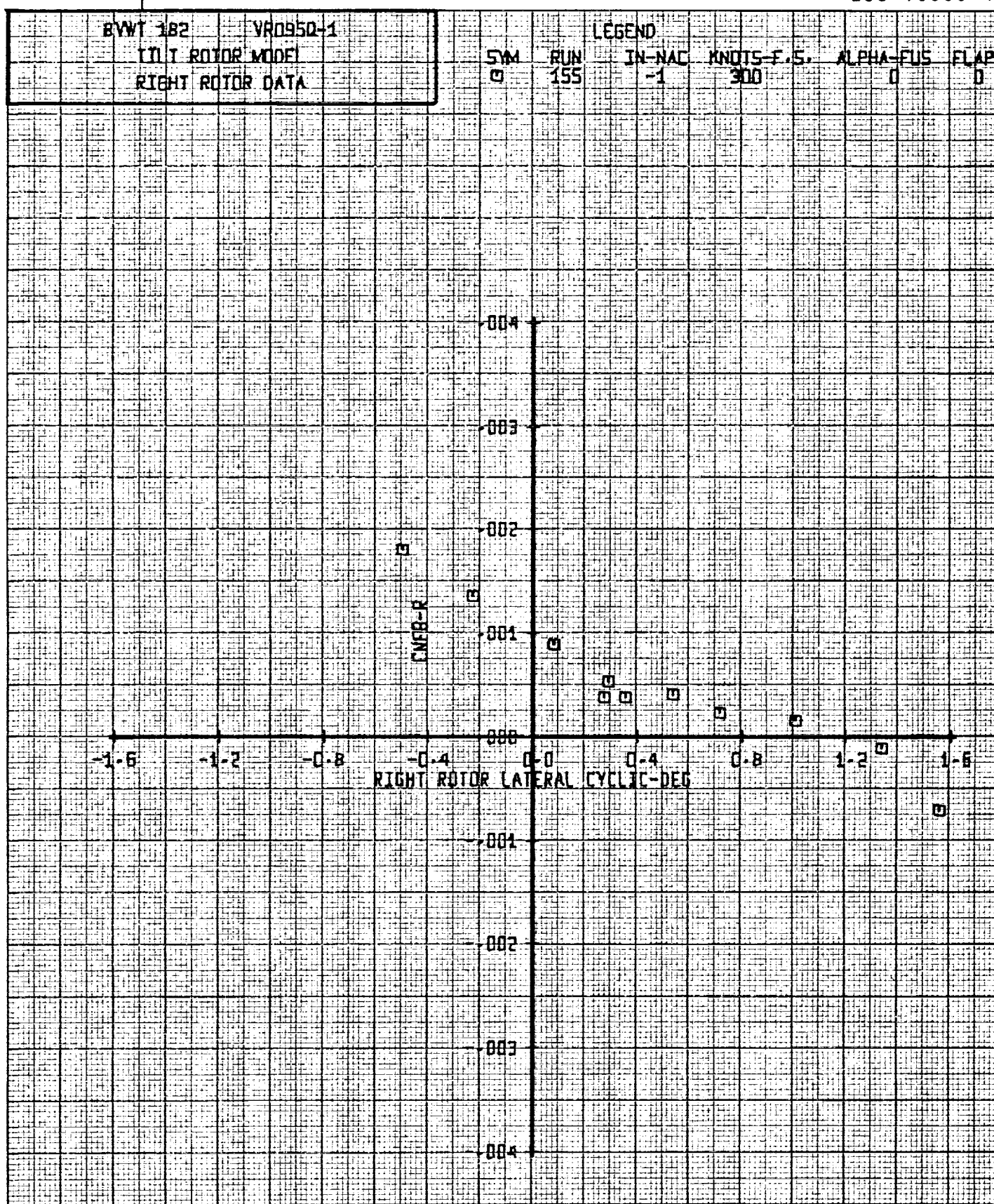


Figure 17-072. Right Rotor Normal Force Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

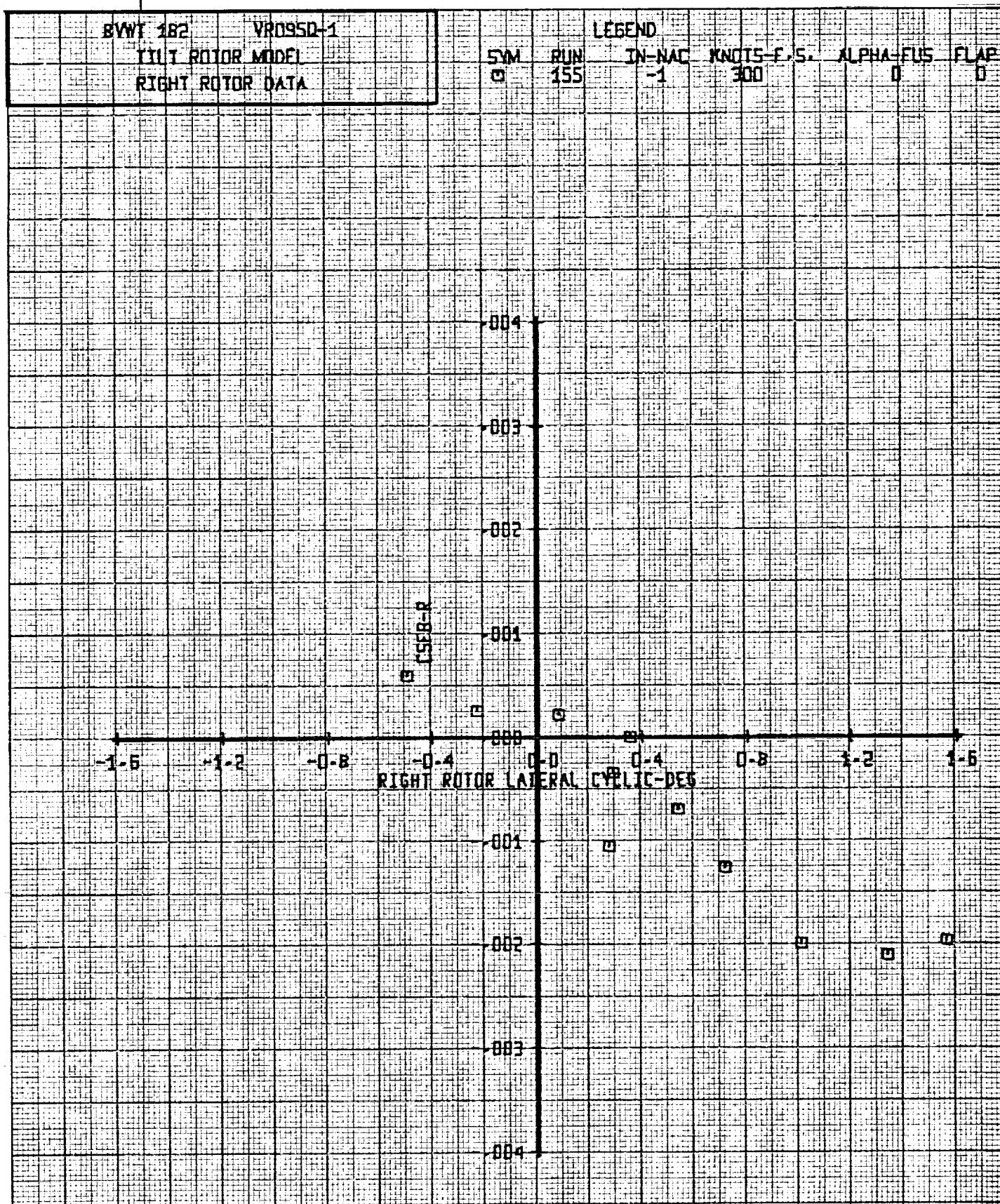


Figure 17-073. Right Rotor Side Force Coefficient Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

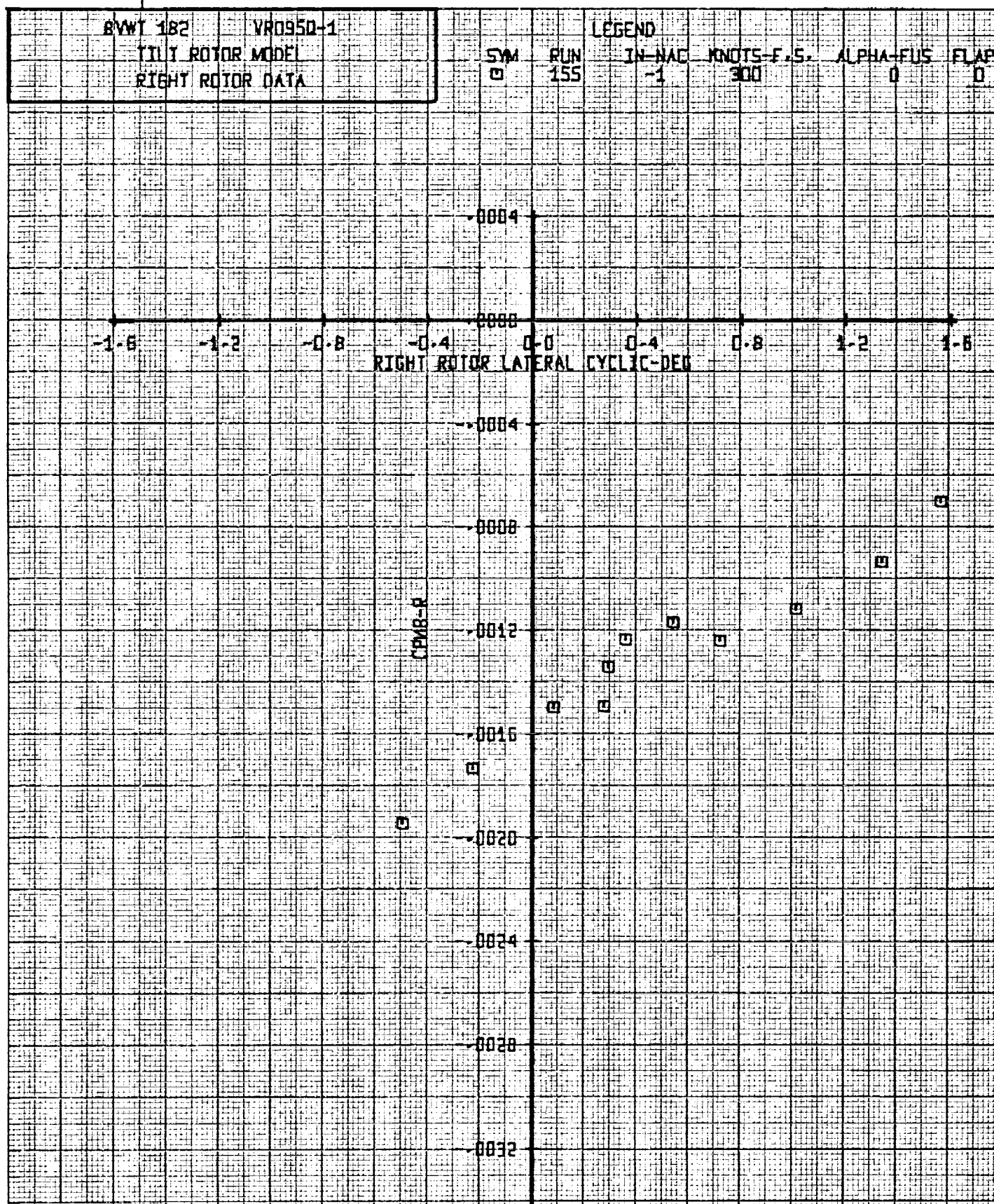


Figure 17-074. Right Rotor Pitching Moment Coefficient Versus Right Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

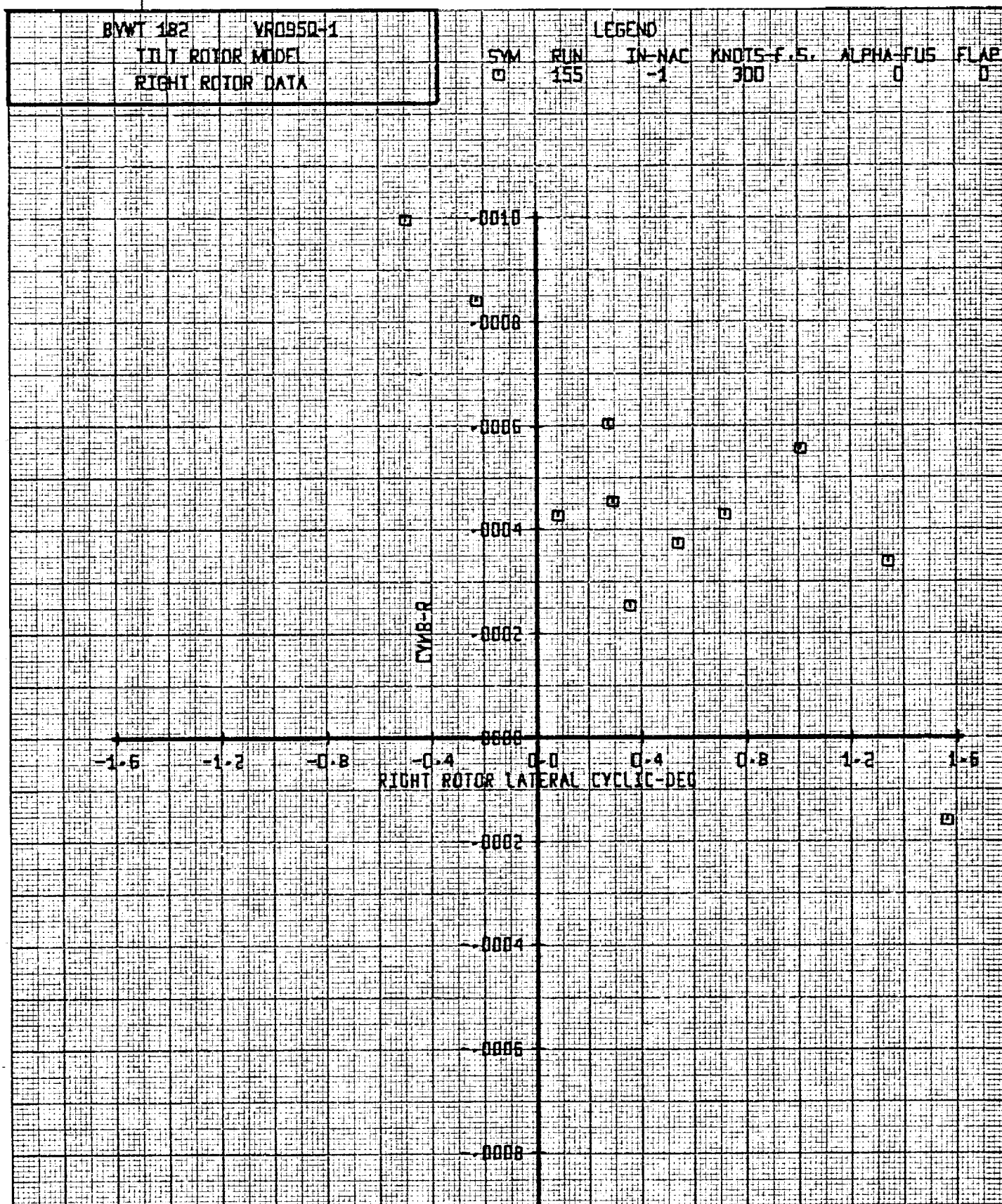


Figure 17-075. Right Rotor Yawing Moment Coefficient Versus Right Rotor Lat. Cyclic \sim Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

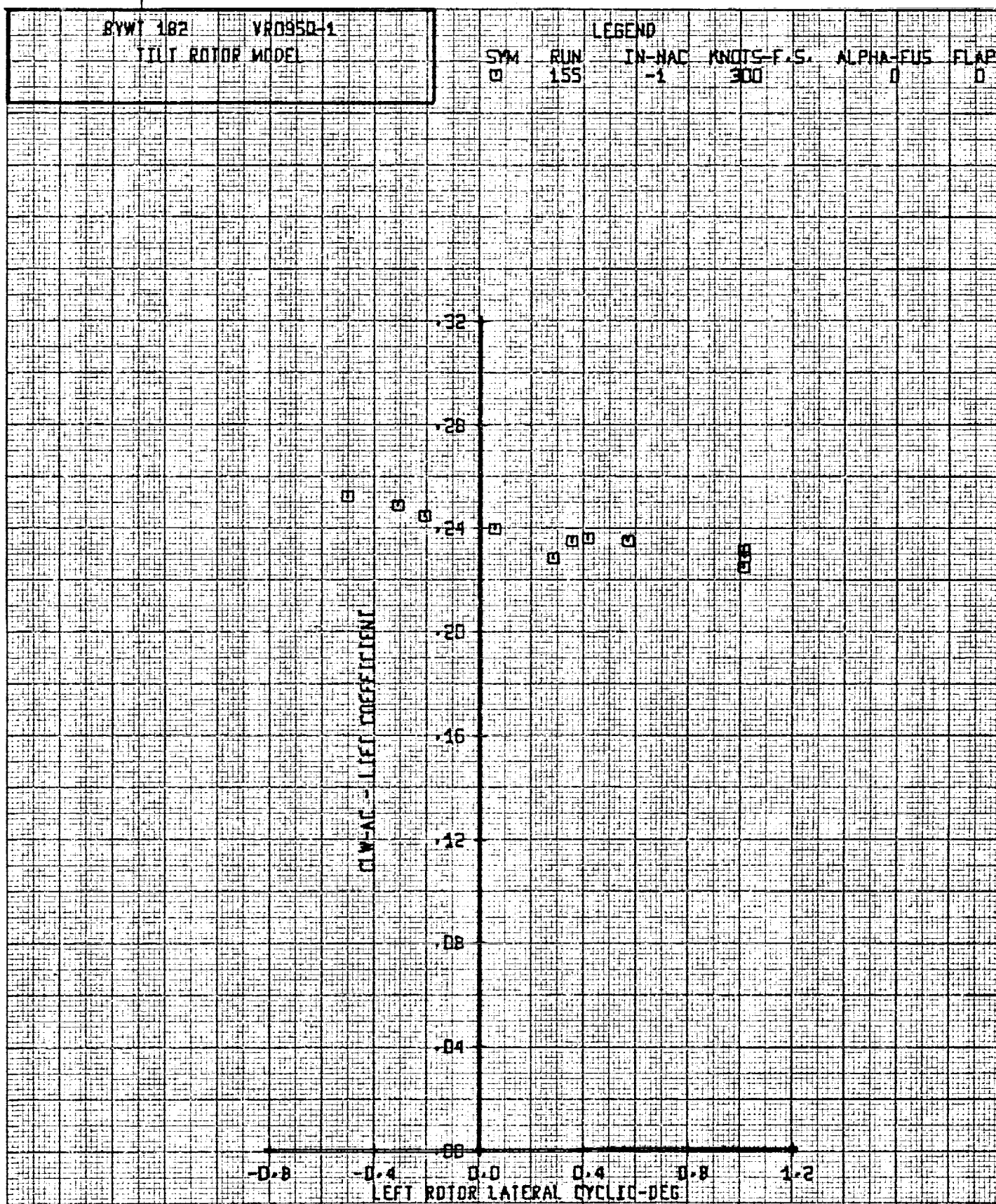


Figure 17-076. Aircraft Lift Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

494

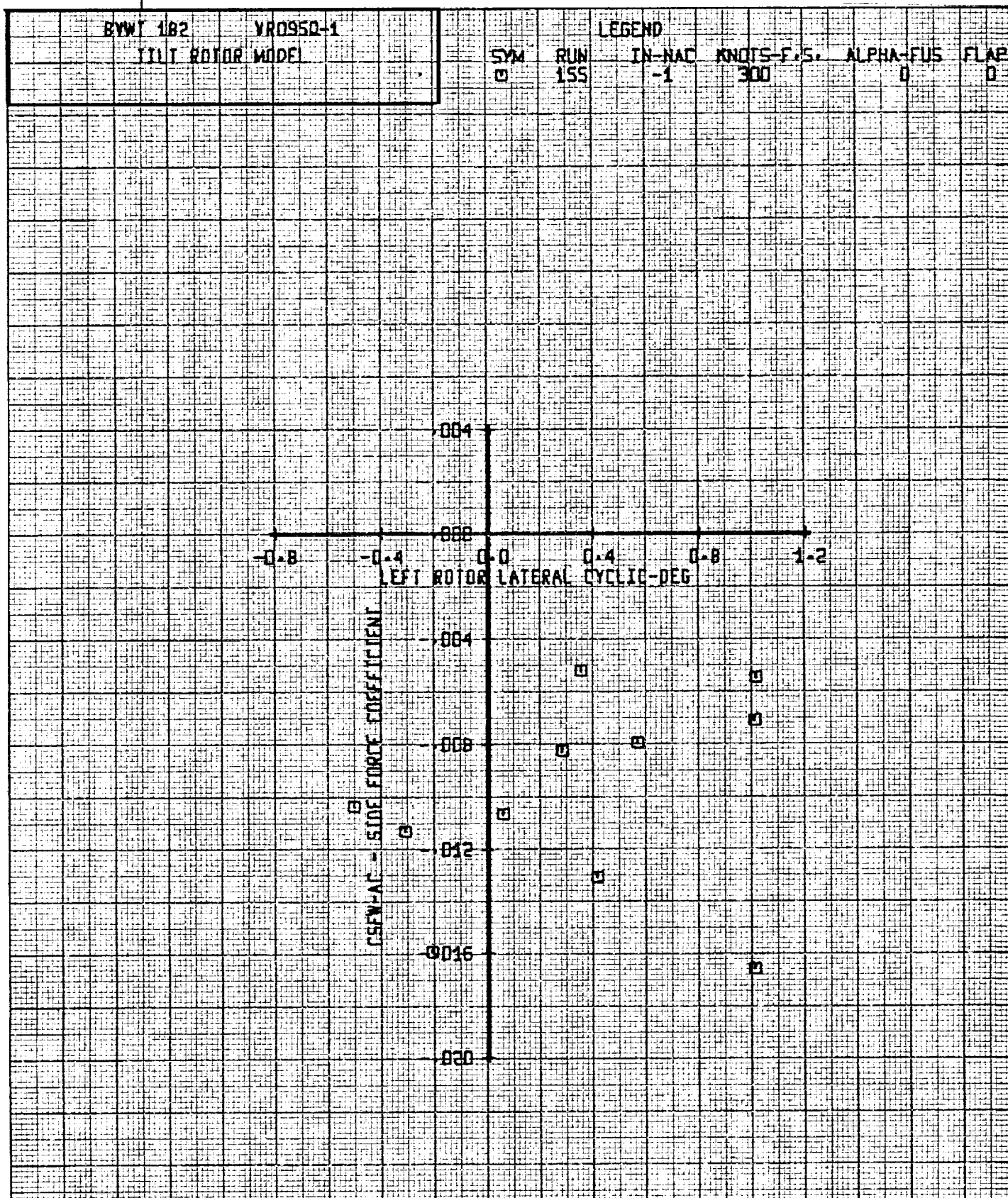


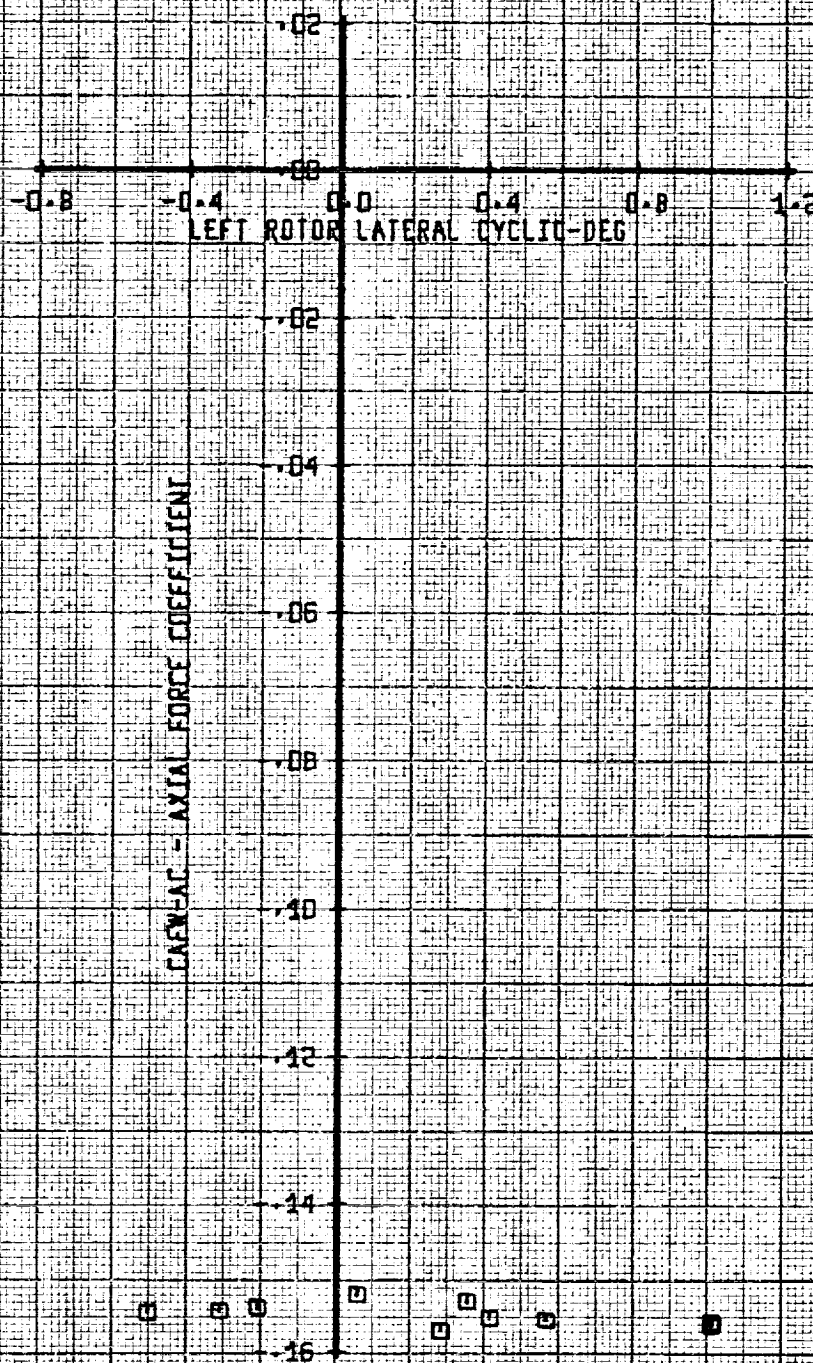
Figure 17-077. Aircraft Side Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale
Airspeed 300 Knots.

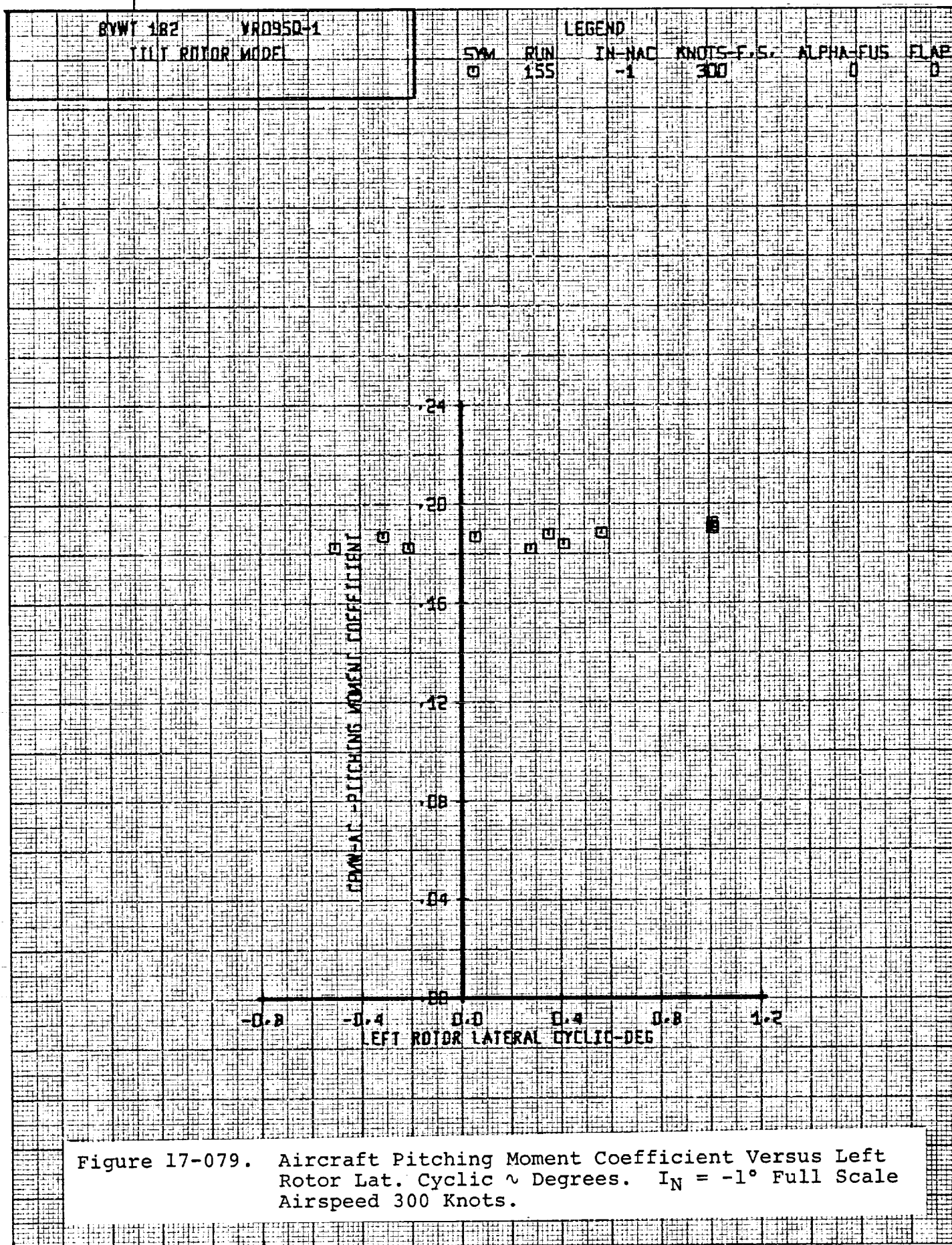
BYWT 182 VR0950-1
 TILT ROTOR MODEL

LEGEND

SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	155	-1	300	0	0

Figure 17-078. Aircraft Axial Force Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.





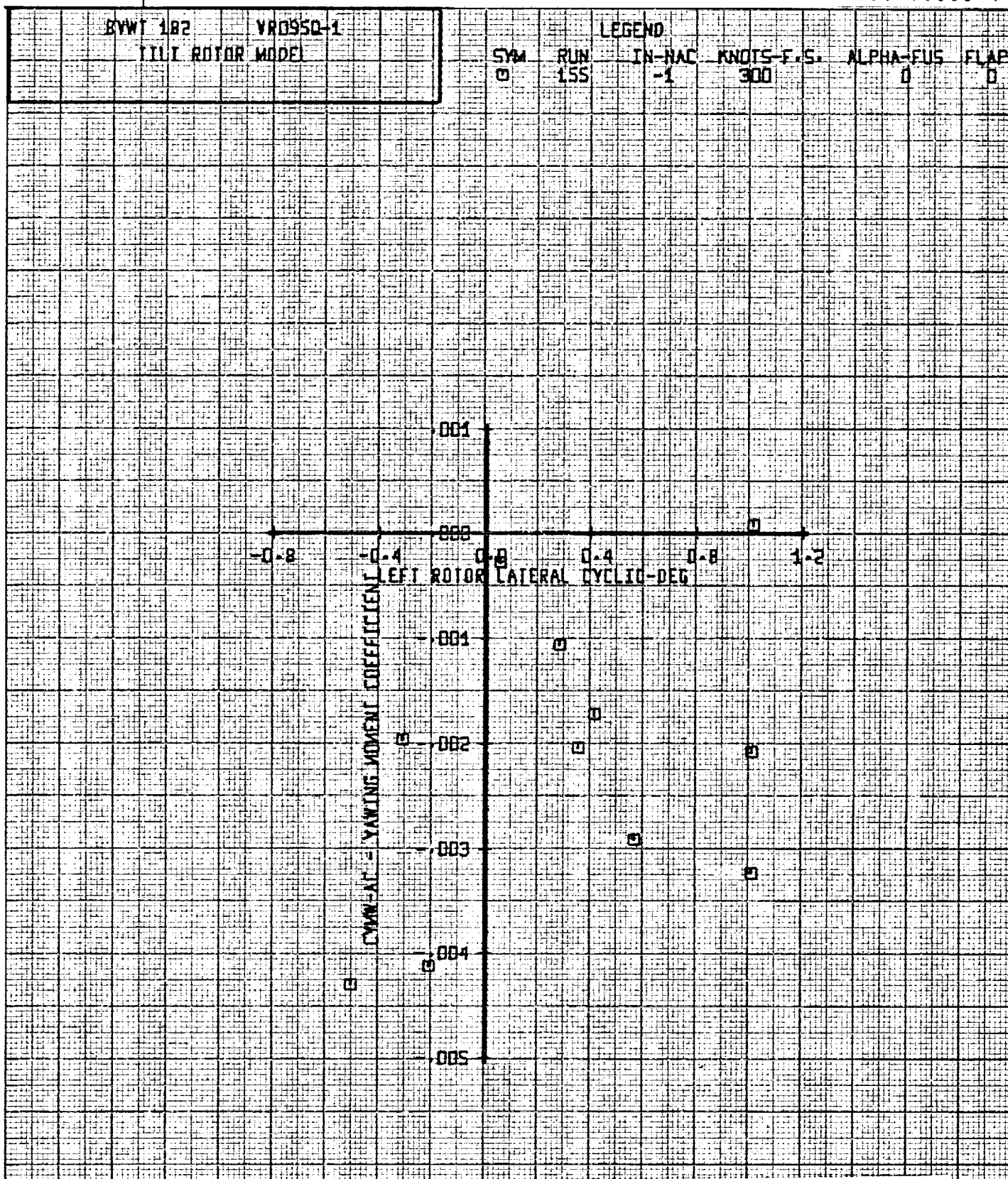
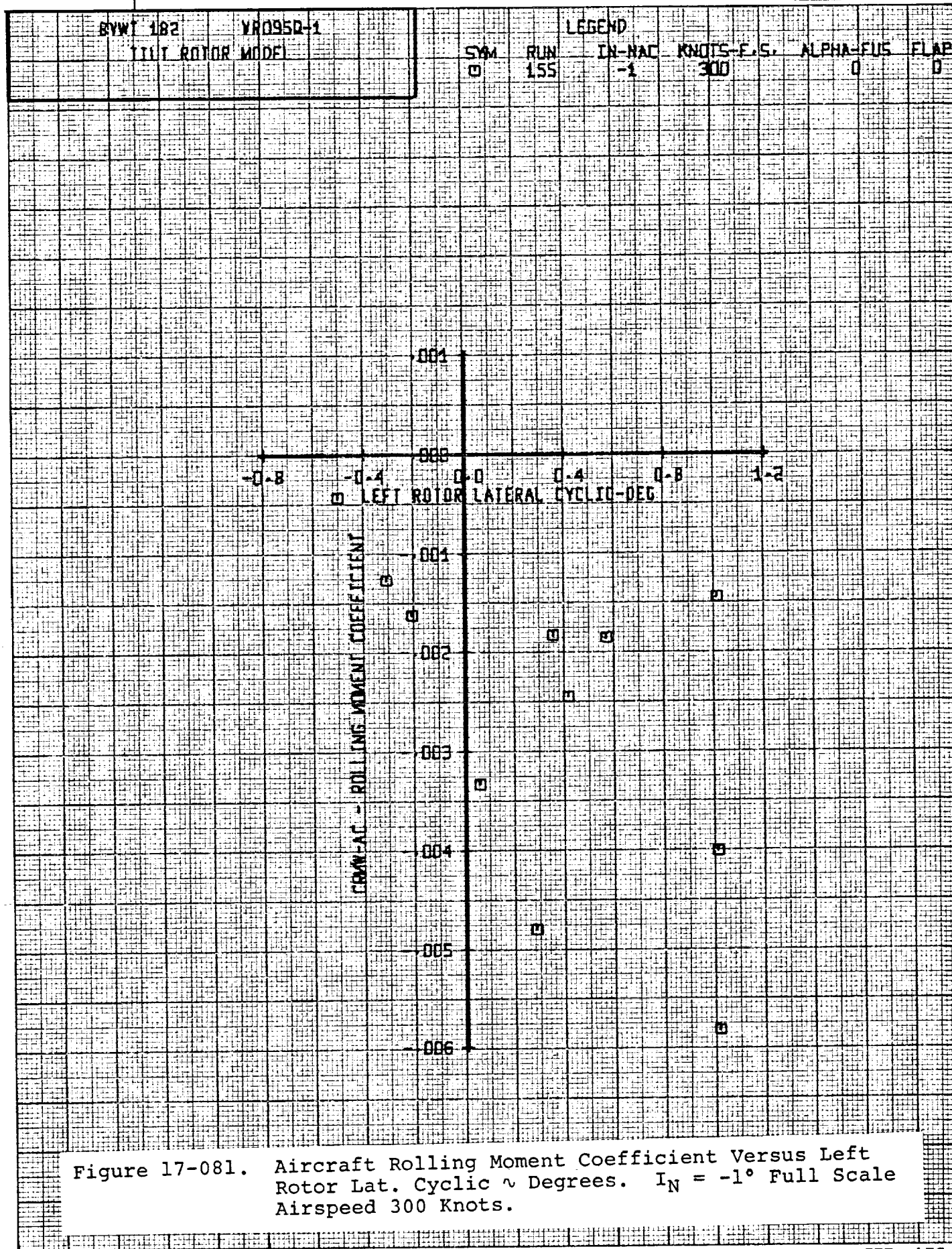


Figure 17-080. Aircraft Yawing Moment Coefficient Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



BNWT 182 VR0950-1
TILT ROTOR MODEL
LEFT ROTOR DATA

LEGEND
SYM RUN IN-NAC KNOTS-F.F. ALPHA-FUS FLAP
□ 155 -1 300 0 0

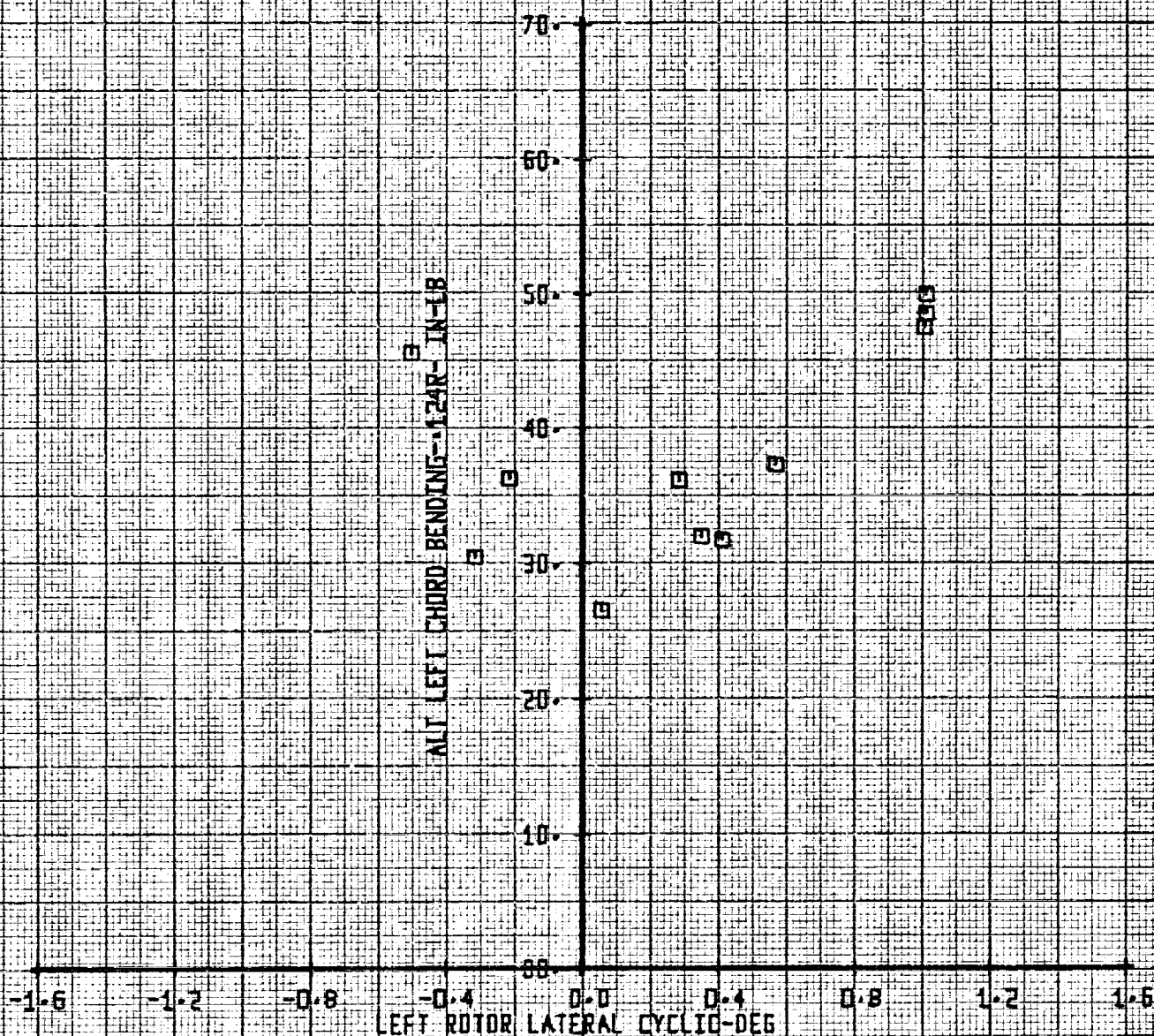


Figure 17-082. Alt. Left Chord Bending Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

500

SET 106
BNWT 182

BVWT 182 VR0950-1

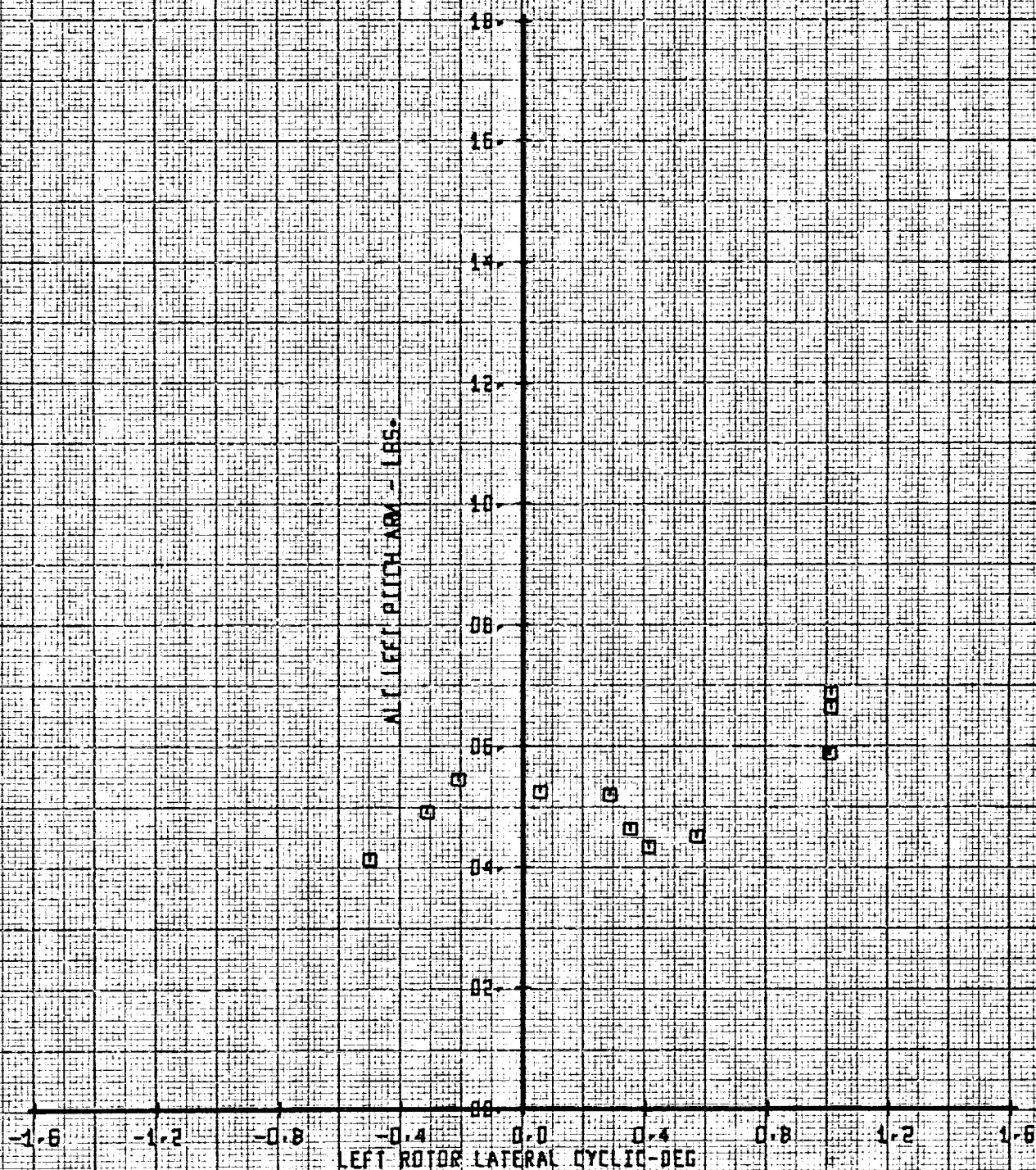
TILT ROTOR MODEL

LEFT ROTOR DATA

LEGEND

SYM
□RUN
155IN-NAC
-1KNOTS-F.S.
300ALPHA-FUS
0FLAP
0

Figure 17-084. Alt. Left Pitch Link Load Versus Left Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



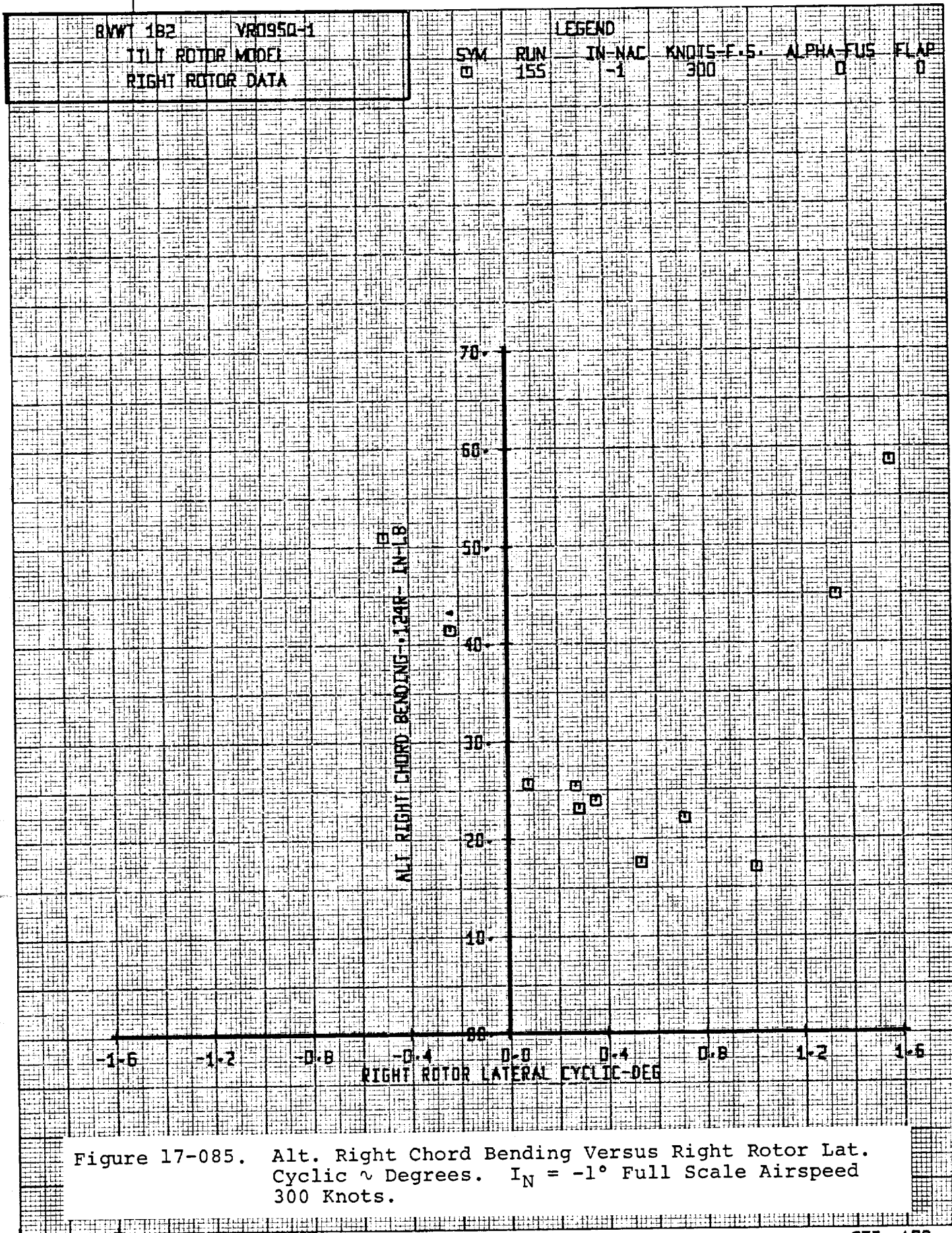


Figure 17-085. Alt. Right Chord Bending Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

BVWT 182 YR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

SYM

RUN

LEGEND

IN-MAC

KNOTS-F.S.

ALPHA-FUS

FLAP

□

155

-1

300

0

0

Figure 17-086. Alt. Right Flap Bending Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

ALT RIGHT FLAP BENDING - IN-LB

-1.6 -1.2 -0.8 -0.4 0.0 0.4 0.8 1.2 1.6
RIGHT ROTOR LATERAL CYCLIC-DEG

SET 106
BVWT 182

504

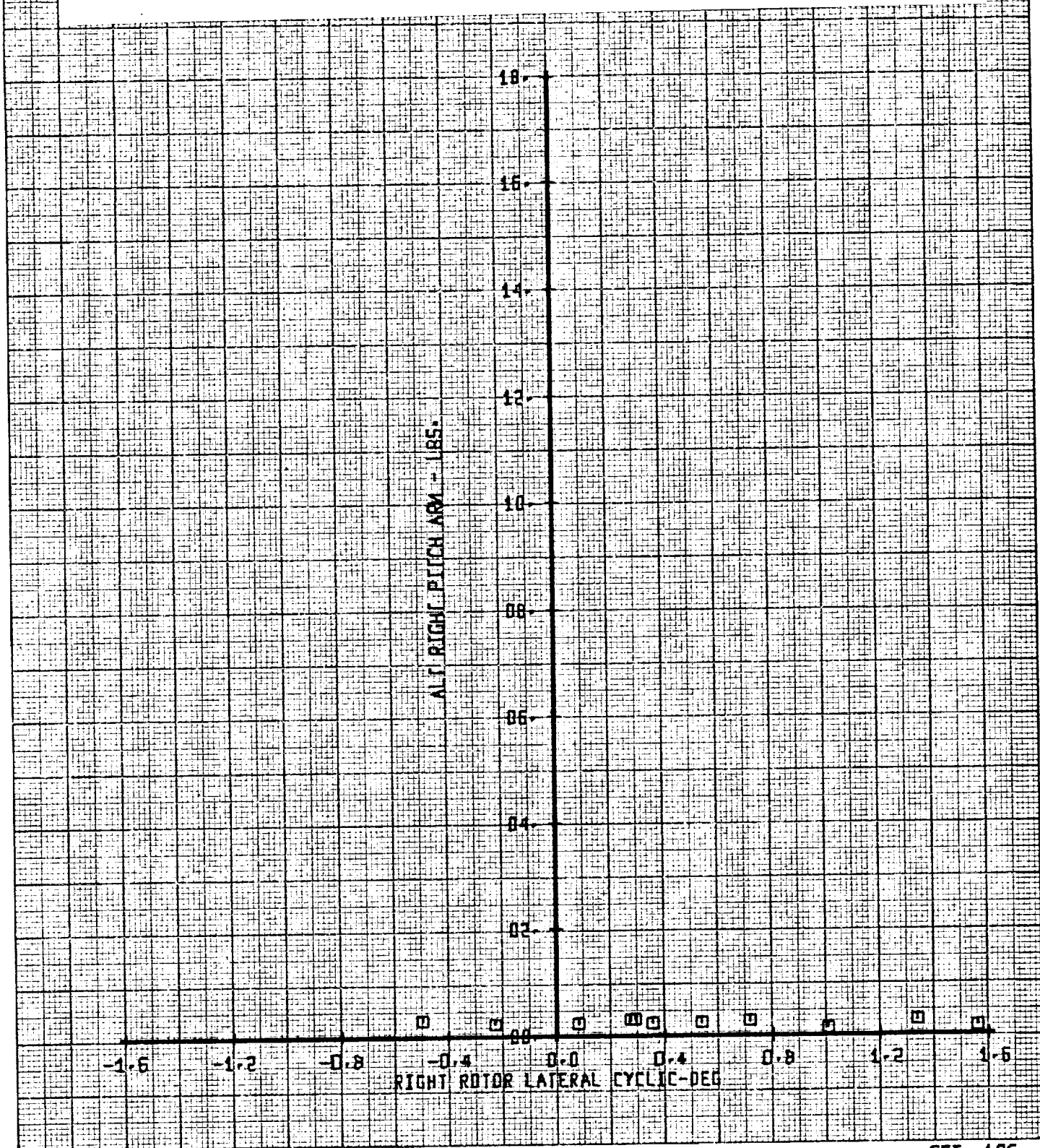
BVWT 182 VR0950-1

TILT ROTOR MODEL

RIGHT ROTOR DATA

LEGEND					
SYM	RUN	IN-NAC	KNOTS-F.S.	ALPHA-FUS	FLAP
□	155	-1	300	0	0

Figure 17-087. Alt. Right Pitch Link Load Versus Right Rotor Lat. Cyclic ~ Degrees. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



505

SET 106
BVWT 182

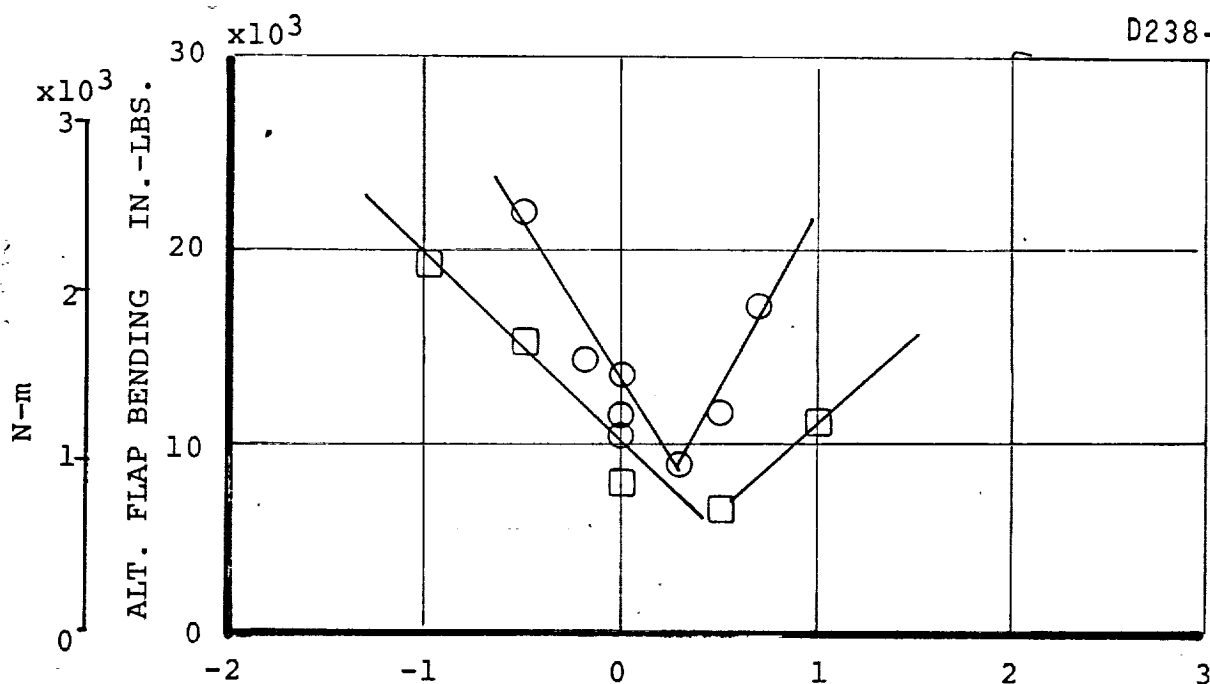


Figure 17-089. Alt. Left Rotor Blade Flap Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

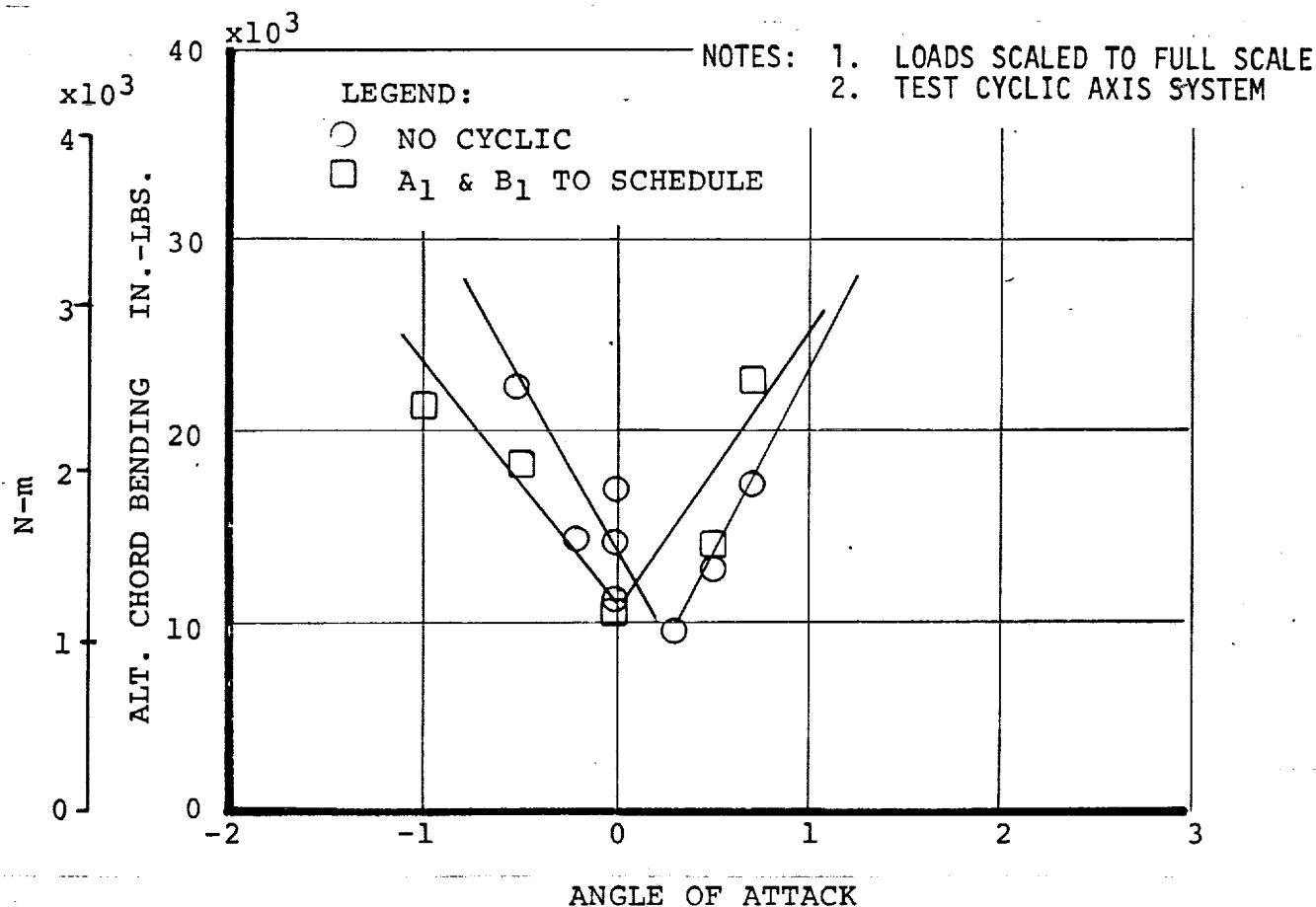
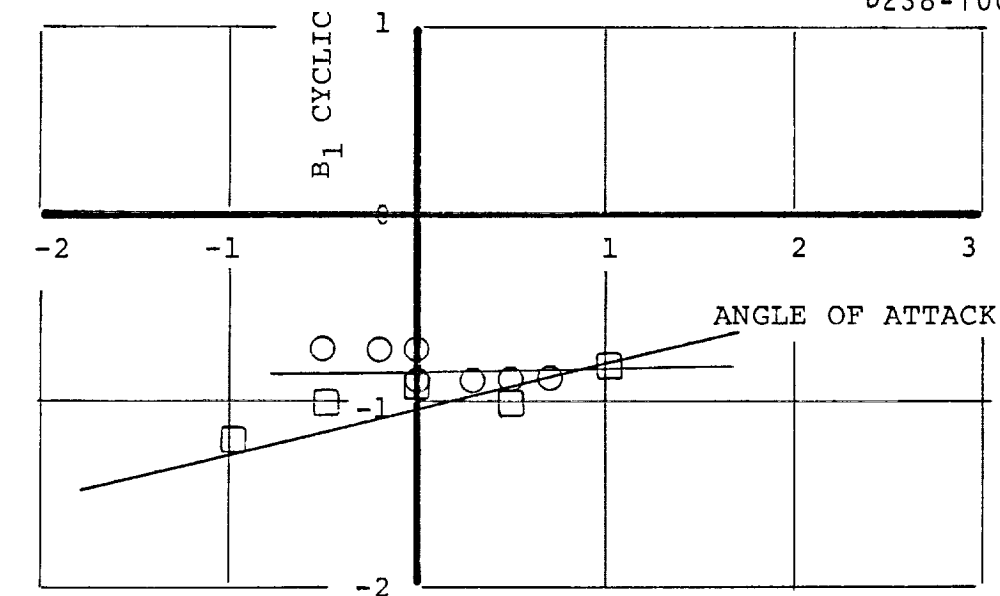


Figure 17-088. Alt. Left Rotor Blade Chord Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



LEGEND:
 ○ NO CYCLIC
 □ A_1 & B_1 TO SCHEDULE

NOTES: 1. LOADS SCALED TO FULL SCALE.
 2. TEST CYCLIC AXIS SYSTEM

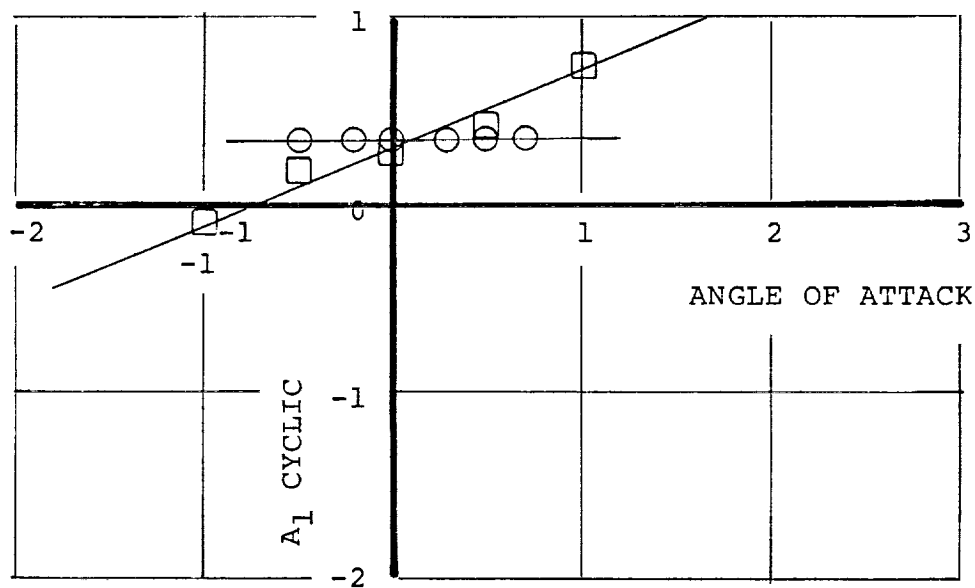


Figure 17-090. Left Rotor Cyclic Schedules. $I_N = -1^\circ$ Full Scale
 Airspeed 300 Knots.

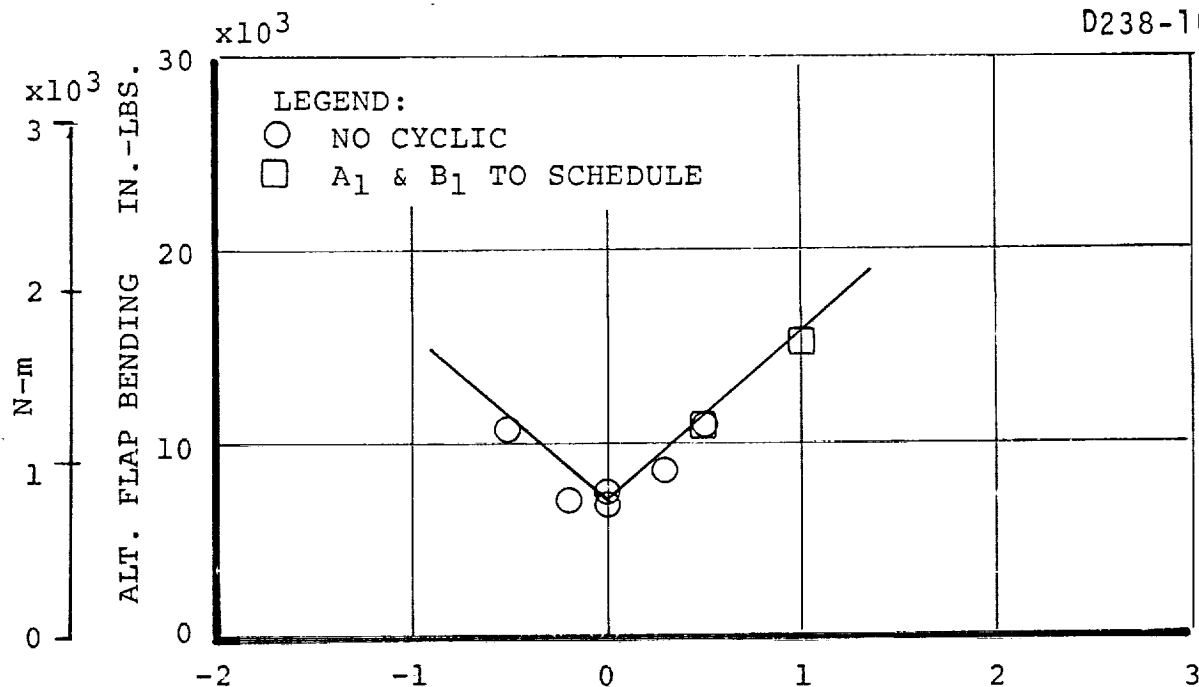


Figure 17-092. Alt. Right Rotor Blade Flap Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.

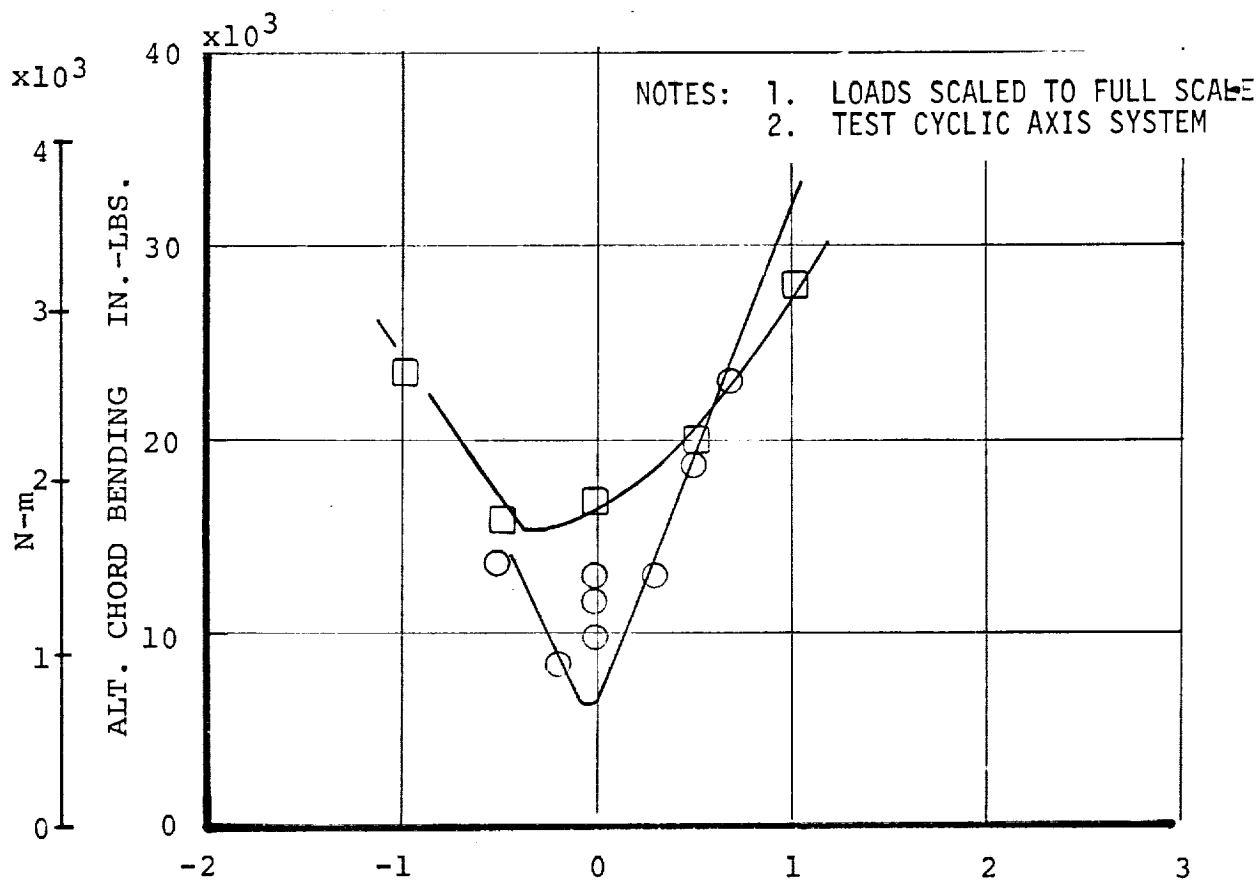
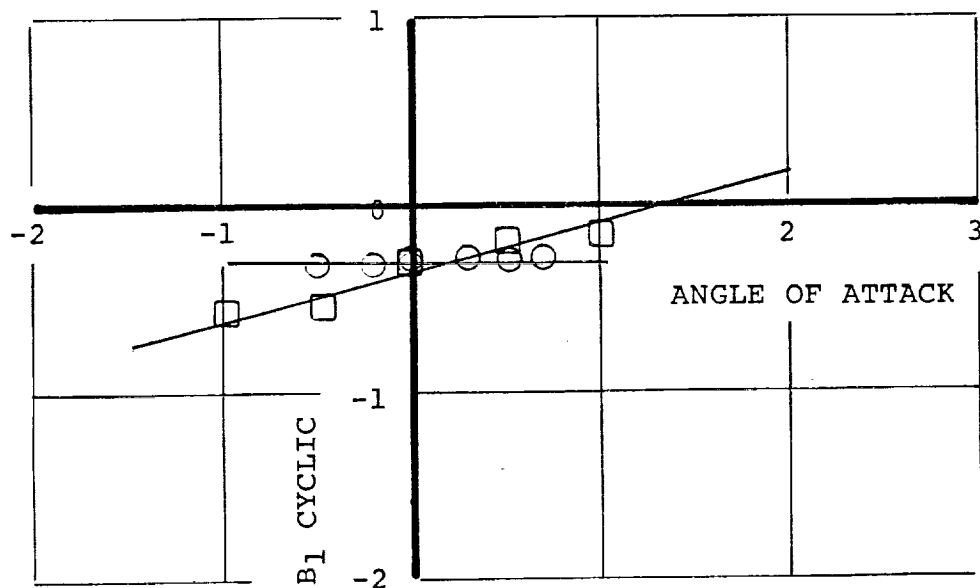


Figure 17-091. Alt. Right Rotor Blade Chord Bending Versus Angle of Attack with Zero Cyclic, Scheduled Cyclic and Minimum Loads Cyclic. $I_N = -1^\circ$ Full Scale Airspeed 300 Knots.



LEGEND:
 ○ NO CYCLIC
 □ A₁ & B₁ TO SCHEDULE

NOTES: 1. LOADS SCALED TO FULL SCALE
 2. TEST CYCLIC AXIS SYSTEM

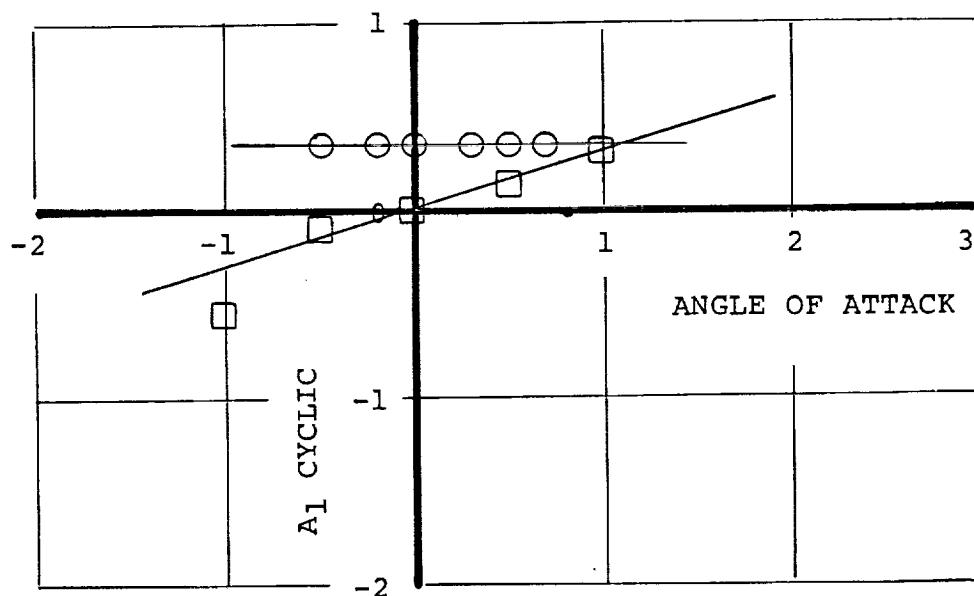


Figure 17-093. Right Rotor Cyclic Schedules. $I_N = -1^\circ$ Full Scale
 Airspeed 300 Knots.

